The Organic Farming Sourcebook

Written and edited by Claude Alvares

(with the assistance of Nyla Coelho)

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Goa, India.

Third World Network
Penang, Malaysia.

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A Note from the Publisher

Other India Press (OIP) and Other India Bookstore (OIB) are institutions that have survived and thrived on promoting alternative perspectives on those key issues that preoccupy us in our times: the land and agriculture; ecology; health; learning; the welfare of all beings. Our titles reflect these perspectives: they range from the subject of organic agriculture to critiques of modern allopathic medical practice, from alternative history to Gandhi schools.

The intention of both organisations is nothing short of mischievous: dethrone synthetic chemicals and pesticides, increase damnation of dams, undermine allopathy wherever necessary and possible, demolish Macaulay's system of education, liberate children from schools and wild animals from zoos, restore the country to its traditions, return destiny to the hands of its ordinary people and fight politically to preserve, protect and expand the space needed for the product of their labour. Eliminate multinational corporations root and branch from every conceivable nook and corner of the subcontinent and planet. Lampoon the World Bank on every occasion. Turn the world upside down.

The Organic Farming Sourcebook is not written to function as a manual on how to do organic farming. (That is the focus of a companion volume.) It is designed to serve as an invitation to the reader to join the planetary movement towards a safe agriculture that does not harm the planet or contribute to climate change, towards healthy foods grown without reliance on synthetic chemicals, toxic pesticides or genetically engineered seed.

The object is to point to people and institutions that are moving in this direction or have already a certain experience and competence, and to record and publish that experience. The final aim is to get the reader not just intensely interested in organic farming, but to provide her/him with all the sources of information s/he may require to know how to proceed: what to read, whom to meet within her/his area, how to get started.

Organic farmers have neither the time nor the inclination to sing their own praises; neither are they inclined to measure productivity and output and compare these with the results of what is called modern or conventional farming. Most organic farmers are happy, peaceful larks who have made their peace with nature and with their companion and colleague species from spiders to earthworms and birds.

It would be foolish to attempt to be comprehensive and final in a country of more than one billion people. We welcome those who may wish to improve this product or who may have been inadvertently left out. The *Sourcebook* is updated as editions get exhausted and new ones are required. OIP is committed to keeping it in circulation till its message has become too obvious to labour any further in print.

We are once again delighted to co-publish this revised edition with the Third World Network (TWN) located in Malaysia. TWN has been promoting the interests of sustainable agriculture, especially organic farming, in Asia, Africa and South America for nearly a decade. It brings out several publications (including policy papers) in this connection and actively promotes alternative, eco-respectful agricultural technologies that have been demonstrably successful in various parts of the world. Some of that work is also featured in this *Sourcebook*.

A new entrant to the organic farming movement is the Organic Farming Association of India (OFAI). This is the only association of record and reporting today in respect of the organic farming movement within this country. Next time there is a delay in the printing this book, you should not have to worry. Simply access OFAI's website: www.ofai.org. You should find everything there.

Remembering the Pioneers

This *Sourcebook* is duty bound to record the contributions of an extraordinary set of individuals who inspired an entire generation to think in terms of farming according to natural principles, based on renewable resources and indigenous and locally available materials. Most of them have by now left the planet for even greener pastures.

The distinguished rice scientist, Dr R.H. Richharia, died in May 1996. This *Sourcebook* remembers him with great reverence and affection. In 2008, Masanobu Fukuoka left us as well.

Others who have died include Dr M.Y. Mangrulkar, Banwarilal Choudhury and Dr D.P. Persai, who worked lovingly with indigenous pure breeds of cattle.

Dr C.V. Seshadri pioneered great and original work on organic farming relying on the most uptodate available tools of his trade. He too is no more, having been taken to her bosom forever by Mother Ocean a decade ago.

Several years ago, we lost another great inspirer of ordinary mortals: Dr B.V. Krishnamurti from Nanjangud. Can one ever forget his insistence on protecting what he so felicitously called 'the priceless ecological endowments given to us by nature in the form of water and soil'? We also owe our respects to John C. Jacob, who died in 2008.

Between the last edition of this *Sourcebook* and the present one, we have lost Winin Pereira, K.T. Thomas, P.D. Baphna and Purushottam Rao. Pereira quit his professional field – nuclear research – to concentrate his fearsome firepower on splitting up the chemical and multinational establishments. He was the country's most articulate spokesman of indigenous farming.

Some of those who live and who continue to promote organic farming relentlessly include Sailen Ghosh, Bhasker Save, Vijay Jardhari, Shoor Vir Singh, G Nammalwar, Narayan Reddy, Bernard Declercq, Subhash Sharma, Sundararaman, Suresh Desai, Prof. Radhamohan, Dhirendra Soneji, Dr Venkat and several others. Sailen Ghosh, for example, railed against fertiliser plants even when he was closely associated with the petrochemicals industry. He has been writing on organic farming now for thirty years!

This *Sourcebook* remembers them all with great fondness and gratitude.

Acknowledgements

Some people have slogged more than others to produce this book. Principal person here at the Organic Farming Association of India Central Secretariat office who coordinated the research and kept tabs on everyone and everything for this edition – and with total devotion and dedication – is Nyla Coelho. Without her assistance, generously given, this *Sourcebook* would not have seen the light of day and would have remained permanently within the darkness of night.

Staff at Other India Press and from the Organic Farming Association of India have added their own essential contributions to the on-going work. Others who helped include: D.D. Bharamagoudra, Dinesh Kumar, P V Satheesh, Santosh Kumar, Naagalaxmi, P Babu, Abhay Mutalik Desai, Krishna Prasad, M. Revathi, G. Nammalwar, Bernard De Clercq, K V Deyal, Radhakrishnan, Tomy and Seepja Mathew, Rony Joseph, Miguel Braganza, Jayant Barve, Tarak Kate, Kisan Mehta, Kapil Shah, Lorry Benjamin, A K Sharma, Umendra Dutt, Kavita Kuruganti, Debjeet Sarangi, Vincent Darlong, Amba Jamir, Bhartendu and Shobhana Prakash, Siddharth Jaiswal and Shammi Nanda.

Numerous people have helped by providing photographs, phone numbers, email addresses and contact links. Critical has been the overall supervision and assistance of Norma Alvares. Hailey Swift went over the final output to weed out any errors in the language. Nyla herself was assisted by Reshma Pednekar. Milind formatted the entire book and also designed the cover.

All responsibility for the work finally is mine: the buck stops here. If you find the 'payasam' good, we will be happy to hear about it. If you wish to fling mud, welcome: we're looking for more soil out here since we keep losing most of it to heavy rainfall erosion. If you have any changes, inclusions, deletions, recommendations, get in touch with us and we shall carry out appropriate amendments in future editions.

Increasingly, however, most information in the *Sourcebook* will appear progressively on the web, especially on www.ofai.org. Our intention is not to sell books but to further the organic farming movement in India and abroad. If the internet is a better medium to get the information across, we shall use that as well.

The *Sourcebook* will continue to remain in print for all those dinosaurs like myself who (like millions of other dinosaurs) prefer to get their information on paper.

Claude Alvares

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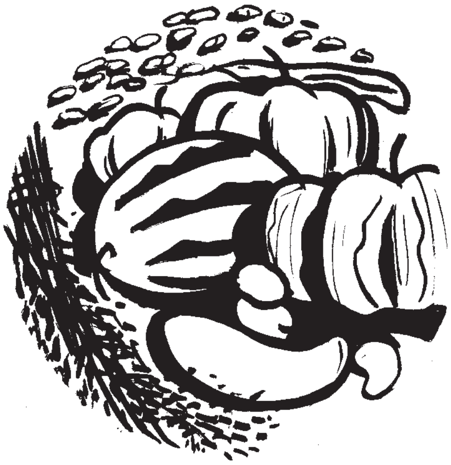
Dedicated to

Acharya Ramdev, Sri Sri Ravi Shankar, Rishi Prabhakar, Hitruchi Vijayji Maharajsaheb
and Sri Sri Raghaveshwara Bharathi Swamiji (of Shimoga)

In their insistence on organic food, they have given life and immense hope to Bharat Mata,
her environment, her farmers, her agriculture, her cattle.

For this, this country will be forever grateful.



The essay that follows is a fine tribute to India's persevering and almost indestructible traditions concerning food – of growing it and sharing it, despite the negative inducements of modernity.

Our two scientist-scholars, Jatinder Bajaj and M.D. Srinivas, begin with the significant observation that the diet of the average Indian has remained at less than 200 kg per year now for almost 200 years. They also observe that this quantity was regarded by the British as the minimum requirement for staving off famines! So our people have been on a famine diet for more than two centuries!

Our two authors investigate why this should be so, especially when faced with a tradition that valued abundant food and which was rich in directions concerning the sharing of such abundance with others – including animals. They provide numerous minute examples from sacred texts and from history to prove their point that kings, princes, social institutions like *chatrams*, temple trusts, the family, were concerned about people going hungry and took effective steps to ensure that hunger did not prevail.

They carefully document how several of these traditions – especially those where large numbers of people were freely fed – were soon frowned upon as 'wasteful' or dismissed as 'useless alms' by the nation of shopkeepers who gradually turned India into a colony. Influential and so-called educated Indians – many in India's modern bureaucracy – now echo such parsimonious ideas. However, a large number of indigenous institutions carry on these traditions nonetheless.

Temples, gurudwaras and other similar institutions continue to feed thousands of people everyday.

May the article (and the book from which it is excerpted) reinforce and strengthen support for these traditions. It is these traditions that will continue to order that the all-important issue of food is kept firmly outside the entrenched meanness of modern civilization symbolized by the modern market and its uncaring promoters.

CHAPTER ONE

The Food Traditions of India

Annam bahu kurvita...

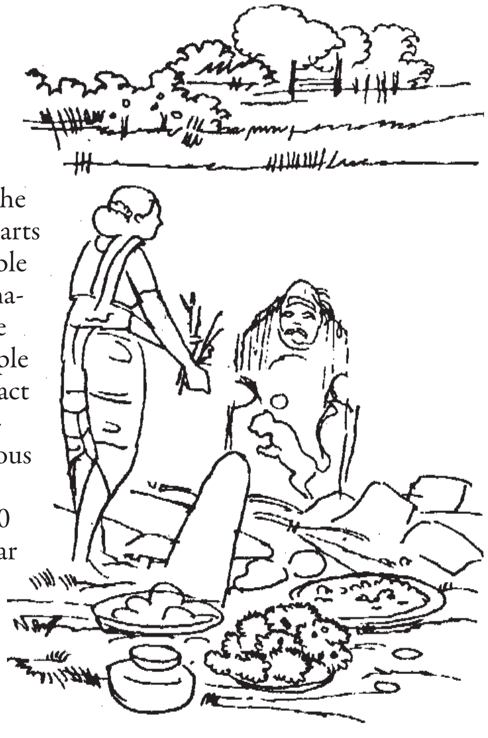
The Indian discipline of growing and sharing food in plenty

India is hungry. For almost two hundred years, the average availability of food-grains in India has remained below 200 kg per capita per year, which the British administrators considered to be the minimal requirement for staving off famines. The country, it seems, reached a state of near famine within a few decades of the coming of the British, and we have remained in that state ever since.

India today produces around 180 million tonnes of foodgrains for a population of around 900* millions, implying an average of 200 kg per capita per year. Of the gross production of about 200 kg per capita of foodgrains allowance has to be made for seed and wastage, even if it is assumed that little need be fed to the animals. Taking into account these deductions, it is estimated that the quantity of foodgrains available for human consumption in 1990 was around 180 kg per capita per year, which is less than what the famine commission appointed by the British administration in 1880 had estimated to be the bare minimum to avoid starvation deaths, and is lower than what is consumed almost anywhere else in the world.

Foodgrains, cereals and pulses together, constitute almost the whole of the staple food of the Indians. There is little flesh or fish consumed in India, and there is also not much consumption of edible roots, which constitute a fairly large proportion of the staple food in much of Africa and parts of Europe. Average consumption of flesh and fish in India for 1990 was estimated to be 7.5 kg per capita per year, and if we also count about 20.5 kg per capita per year of potatoes, total staple consumption would amount to a little above 200 kg.

On a rough reckoning, consumption of staple foods – cereals, pulses, edible roots, flesh and fish – adds up to around 300 kg per capita per year in most countries of the world. Of this around 100 kg consists of flesh and fish in Europe and other parts of the world inhabited by people of European stock. In Asia and Africa, consumption of flesh and fish on the average is much less, around 30 kg per capita per year, and grains and roots therefore make up the rest. And in those parts of Africa where edible roots constitute a major part of the staple basket, the total staple consumption is in fact much higher: Nigeria, the most populous country of Africa consumes about 420 kg per capita per year of staple foods, of which about 320 kg comprises of edible roots.



Average Indian consumption of staple foods thus falls below the ordinary standards of the world by at least one third. There are only a few countries in the world, outside the Indian sub-continent, where average staple consumption is at this level. Countries like Sudan, Ethiopia and Somalia in Africa, and Guatemala, Haiti and Peru in Central and South America are perhaps the only ones – except a couple others that we mention below – where staple consumption happens to be as low as ours; most of these countries are known to have been under great political stress for long periods. And, in many of these countries low availability of what we have called staple foods is often alleviated by a rather large availability of some other food, which happens to be more or less staple there. Thus, diets in Sudan and Somalia are supplemented by large quantities of milk, amounting to 116 kg per capita per year in Sudan and 226 kg in Somalia; and in other countries of Africa as also in Central and South America large quantities of plantains and

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This article was written in 1994 when the population of India was 900 million. Today it is 1.2 billion. However, per capita availability is yet to improve.

other fruit often make substantially large contributions to the staple.

Countries functioning with a reasonable level of stability seem to be almost always able to provide for a consumption level close to the norm of 300 kg per capita per year, even if it involves undertaking large-scale imports of food. The only exceptions to this rule outside the Indian sub-continent seem to be Thailand in Asia and Kenya in Africa, both of which have a level of staple consumption as low as ours, and both of which seem to have persisted with the ways that came to govern the public life during the times of British domination.

Within the Indian sub-continent, Nepal with average staple consumption of around 260 kg per capita per year seems not too badly off, and Bangladesh with average annual staple consumption of 230 kg per capita is at least better than us. In Sri Lanka, staple consumption of around 200 kg per capita per year is supplemented by almost 70 kg of coconuts. Within the sub-continent only Pakistan and Afghanistan fare worse than us.

The situation of India, and some of our neighbours in the sub-continent, is thus extraordinary. We are living at an average level of consumption that would be unacceptable anywhere else in the world, and which is no better than what is considered to be sufficient in situations of famine.

Animals remain hungry too

This is the situation with respect to the food available for human consumption. When we take into account the total supply of foodgrains and roots, the Indian situation in comparison with the rest of the world, seems to be even worse. As we have seen, the supply of foodgrains and edible roots together in India amounts to only about 230 kg per capita per year, of which 200 kg constitute human food – which is almost the whole of the available supply after allowance is made for seed and waste – thus leaving nothing for the animals.

In most other countries a considerable amount is often produced or imported for the cattle: the average supply of foodgrains and roots in the world is nearly twice the amount of foodgrains and roots used for human consumption; much of the other half is fed to the animals. The average supply of foodgrains and roots in Europe adds up to around 700 kg per capita per year. The figure for the United States of America is around 900 kg and for China about 450 kg per capita per year.

Total supply of foodgrains in India is thus less than half of what would be required if we were to feed our animal population the way animals are fed in the rest of the world. Since we produce so little of food, we leave almost no foodgrains for our population of around 270 million heads of cattle and buffaloes. Europe feeds 170 million tonnes of foodgrains – which is near our total production of foodgrains – and 54 million tonnes of edible roots to its cattle population of only 124 million heads. And China feeds 65 million tonnes of foodgrains and 60 million tonnes of roots to about 100 million heads of cattle and buffaloes and 300 million heads of pigs.

Production of foodgrains in India is thus at a level that leaves both our people and our animals hungry.

Scarcity and callousness have become the norm

The figures for availability of food in India clearly point towards widespread hunger of people and animals in India. And every available statistical indicator confirms the prevalence of hunger. Thus, according to generally accepted statistics, 40 percent of the Indian people do not have access to the bare minimum number of calories required for survival, 63 percent of children under the age of five are malnourished and 88 percent of pregnant women suffer from anemia.

But one does not need to look at figures to see the hunger that prevails. In every city and town of India one can see cows and dogs roaming the streets searching for bits of food amongst heaps of dirt. And, in the larger cities, one can see an occasional child or even an adult competing with the cows and dogs for a share of the edible waste. But nowadays there is hardly anything edible in the waste from Indian households; and the cows are often content with filling their bellies with mere paper and plastic, the dogs howl through the night in hunger, and the human children and adults stand and lie on the streets crazed by sheer starvation.

A journey through any part of India in the great railway trains, that criss-cross the country heralding the arrival of modernity here, brings one in even closer contact with hunger and starvation. Young children, their eyes glimmering with the sharp intellect of early age, sweep the floors of the trains to earn a bellyful of food, and fight with the passengers, with the waiters and with each other for the right to the left-overs of food. Their less adventurous and less energetic brothers wait on the platforms silently watching the passengers eat, and almost cry with gratitude for the gift of a single slice of dry bread or a stale roti or idli.

The scenes of hunger and starvation become even grimmer as one heads towards the great pilgrimage centres of India, the roads to which used to be dotted with chatrams, the Indian institutions of hospitality, where bells were rung at midnight to invite the laggard seeker to come and receive his food, and where orphaned children of the passers-by were provided shelter, food, education and care till they were ready to face the world on their own. The persisting image that the pilgrim centres and the trains leading to them now leave on the mind is that of immense hunger and starvation. One of the most unfortunate images that comes to mind

is that of a child of five soothing a younger child of two with a rubber nipple at the end of an empty bottle of milk on the main road of the great city of Tirupati, where a vast stream of pilgrims converges everyday.

The statistical figures and the day-to-day images on the streets all speak of a great hunger stalking the lands of India. But, we as a people insist that we have sufficient food for ourselves. The economists and the policy planners have been claiming such sufficiency of food in India at least since the late sixties. They have now begun to claim that the food available in India is not only sufficient, it is a little too much for our needs, and we should make efforts to export some food and shift some of the foodgrain lands to more exportable cash-crops.

The claim of sufficiency is based on the fact that the food that we produce cannot all be sold within the country at economic prices. There is no dearth of food, it is said, for those who can afford to buy; and those who cannot buy probably do not deserve to be fed. Lack of foodgrains for the animals is explained through a similar argument: Those who feed good food to the animals, it is said, also eat their flesh; we do not rear animals for economic exploitation, so we do not need to allocate foodgrains for them. Thus we condone both the scarcity and the hunger.

But India always valued abundance and sharing

India, however, was not always like this. Indians in the past have laid extraordinary emphasis on growing food in abundance and sharing it in abundance. In fact Indians up to the present times seem to have always looked upon an abundance of food as the primary condition of civilization, and sharing of food was for us the primary discipline of civilized living. And indeed it is the discipline of civilized living that we call *dharma*.

This attitude towards food and the sharing of food is enshrined in the most basic texts of Indian antiquity. A text like the Taittiriyopanisad, a venerable *sruti* which even today continues to be compulsory reading for anyone with some regard for the *vaidika* corpus, gives expression to this Indian attitude towards food with unsurpassable intensity.

The Taittiriyopanisad is a text of *brahmavidya*; its objective is to prepare the seeker for and lead him towards a *darsana*, immediate and direct vision, of Brahman, the creator who at the beginning manifests himself as the universe and retracts the whole of creation back into himself at the end, only to begin the process again, at the beginning of another cycle of creation and dissolution. And in this text of brahmavidya, *anna*, the food, and manifestations of *anna* keep appearing at every step. Anna, in fact, forms the entrance to the edifice of brahmavidya, and what is enshrined at the centre of that edifice is also anna. The seeker, therefore, after going through the long path patiently shown almost step by step by the seer and achieving the darsana, bursts into a joyous celebration of having become one with anna, singing thus: *ahamannam ahamannam ahamannam*, I am anna, I am anna, I indeed am anna.

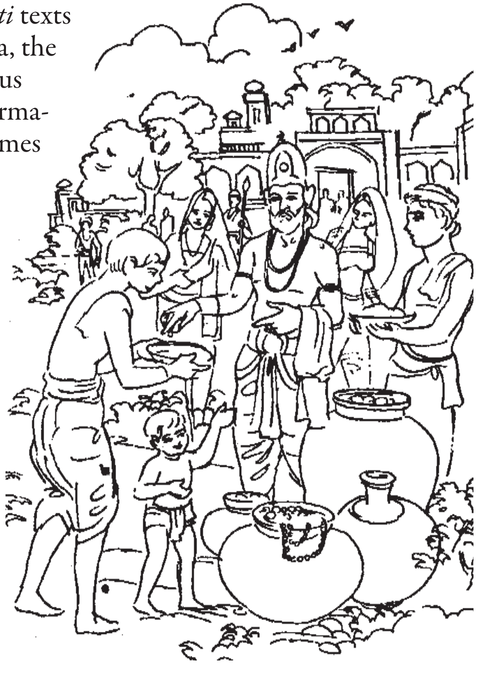
Just before this final unravelling of the ultimate reality for a seeker who has been intensely educated and rigorously prepared for the darsana, the upanisad prescribes a number of *vratas*, inviolable rules of living, for such a seeker to follow. And these are:

> *annam na nindyat. tadvratam.*
>
> (Do not look down upon anna. That is the inviolable discipline of life for the one who knows).
>
> *annam na paricaksita. tadvratam.*
>
> (Do not neglect anna. That is the inviolable discipline of life for the one who knows).
>
> *annam bahu kurvita. tadvratam.*
>
> (Multiply anna many-fold. Ensure an abundance of food all around. That is the inviolable discipline of life for the one who knows).
>
> *na kamcana vasatau pratyacaksita. tadavratam. tasmadyaya kaya ca vidhaya bahvannam prapnuyat. araddhyasma annamityacaksate.*
>
> (Do not turn away anyone who comes seeking your hospitality. This is the inviolable discipline of the one who knows. Therefore, obtain a great abundance of anna, exert all your efforts to ensure such abundance; and welcome all seekers with the announcement that the food is ready, partake of it).

Such is the discipline of abundance and sharing that the Taittiriyopanisad teaches. And the Rigveda emphasizes the discipline in even stronger terms, saying:

> *moghamannam vindate apracetah. satyam bravimi vadha itsa tasya. naryamanam pusyati no sakhayam. kevalagho bhavati kevaladi.*
>
> (Food that comes to the one who does not give is indeed a waste. This is the truth. I, the *rsi*, say it. The food that such a one obtains is not only wasted, in fact it comes as his very death. He feeds neither the *devas*, the upholders of various aspects of creation, nor the men who arrive at his door as friends, seekers and guests. Eating for himself alone, he becomes the partaker of sin alone).

The discipline of growing an abundance of food and sharing it in abundance that is taught in the sruti, like the Rigveda and the Taittiriyopanisad, is of course emphasized again and again in the *smrti* texts like the Mahabharata, the Ramayana, the various puranas and the dharmasastras of different times and communities.



The Mahabharata recalls the greatness of food and the giving of food in a particularly imposing manner. As is well known, in the Mahabharata, Bhisma Pitamaha, the grand wise old man of Kuruvamsa, gives a long discourse instructing Yudhisthira in great detail about all aspects of dharma. This discourse runs to about 25,000 verses and forms nearly a quarter of the epic. Bhisma dies almost immediately after the end of this discourse, and Yudhisthira after much persuasion undertakes to perform an *asvamedhayajna*. After accomplishing the yajna and being relieved of the great effort and activity that such an observance involves, Yudhisthira requests Srikrisna to let him know the essence of the entire teaching of Bhisma. Srikrisna, in response, utters just 15 verses, the first ten of which lay down the centrality of *annadana*, the giving of food, in the life of a disciplined householder and the next five celebrate the greatness of food, its emergence out of the vital essences of the earth and its intimate connection with all life.

The first verse Srikrisna utters while summarizing the teachings of Bhisma for Yudhisthira is:

annena dharyate sarvam jagadetaccaracaram
annat prabhavati pranah pratyaksam nasti samsayah

(The world, both animate and inanimate, is sustained by food. Life arises from food: this is observed all around, there can be no doubt about it).

And he ends his discourse on annadana with:

annadah pranado loke pranadah sarvado bhavet
tasmadannam visesena datavyam bhuti-micchata

(The giver of food is the giver of life, and indeed of everything else. Therefore, one who is desirous of well-being in this world and beyond should specially endeavour to give food).

The Bhavisyapurana in its chapter on *annadanamahatmya*, the greatness of the giving of food, while probably recounting this incident from the Mahabharata, renders the teachings of Srikrisna in the cryptic commanding phrase:

dadasvannam dadasvannam dadasvannam yudhisthira

(O Yudhisthira! Give food! Give food! And, keep giving!)

Bhisma himself during his long discourse, and also elsewhere in the Mahabharata, reminds Yudhisthira again and again of the importance of feeding others in general, but especially of the duty of the king to ensure that within his domain agriculture is well tended for, that peasants are not oppressed by unjust exactions, and that the irrigation of their fields is not left merely upon the mercy of gods, so that there is always an abundance of food around and nobody anywhere has to sleep on a hungry stomach. This is also the advice that Srirama offers Bharata while enquiring after the welfare of Kosala when the latter visits him at Citrakuta during the early phase of Srirama's long sojourn in the forests.

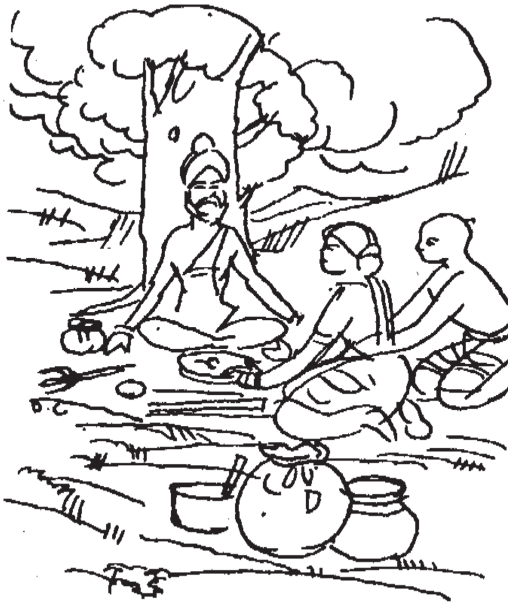
Incidentally, all descriptions of *ramarajya*, the ideal times that the Indians always dream of, seem to essentially portray an abundance of crops and a complete absence of hunger and thirst, as also of disease and error over the whole earth. Thus describing the ramarajya that comes to prevail over the earth during the reign of Yudhisthira, the Mahabharata says:

vavarsa bhagvan devah kale dese yathepsitam

niramayam jagadabhut ksutpipase na kimcana

adhirnasti manusyanam vyasane nabhavan-matih

(Devas granted rains, at the right place and the right time, to fulfill all wants. The world became free of all disease. There was no hunger or thirst anywhere. There was no mental suffering, and nobody was led astray by temptation).



And:

mahi sasyaprabahula sarvaratnagunodaya

kamadhugdhenuvad bhogan phalati sma sahsaradha

(Earth yielded abundant crops, and all precious things. She had become the provider of all goodness. Like *kamadhenu*, the celestial cow, the earth offered thousands of luxuries in a continuous stream).

The opposite of ramarajya is yugaksaya, the end of times, and according to the Indian understanding the times begin to come to an end when food becomes so scarce that the people of the country are reduced to the selling of food; and even those who seek are refused food, water and shelter and are thus forced to lie around hungry and thirsty on the roads. There perhaps cannot be a sin greater than that of the king during whose reign the times reach such a nether end. Bhisma, in fact, in a particularly intense yet short chapter in the anusasanaparvan of Mahabharata, warns Yudhisthira that the hunger of even one person in a kingdom renders the life of the king forfeit; and if there be a king in whose kingdom young children eagerly watch the delicious meals of others and are not offered the same food with all ceremony and care, what indeed would be the fate of such a king?

But though the responsibility to ensure an abundance of food and an absence of hunger and want lies most heavily upon the king, it in fact has to be shared by all *grhasthas*, all the disciplined householders. In the Indian understanding every householder is indeed a king within his domain, and it is equally incumbent upon him to ensure that none within his care suffers from hunger and want. In fact, the Indian insistence is that a householder may partake of food only after the ancestors and the *devas* representing different aspects of nature have been propitiated, the *bhutas* representing all created beings have been offered their share, the seekers at the door and the guests have been satisfied, and the servants and dependents have been fed. The Manusmrti, the authentically conservative dharma-sastra of Indian tradition, lays down this daily discipline of feeding and taking care of others before eating for oneself in more than two hundred verses; summarizing the discipline the text says:

devanrsinmanusyamsca pitrngrhyasca devatah
pujyitva tatah pascadgrhasthah sesabhug-bhavet
agham sa kevalam bhunkte yah pacatyatma-karanat
yajnasistasanam hyetatsatamannam vidhiyate

(The householder ought to eat only what is left after making reverential offerings to the devas, rsis, ancestors, the bhutas and the men under his care and those who come seeking at his door. A householder who cooks for himself alone does not partake of food, but partakes merely of sin. For the wise one the leftover of what has been shared with all of the above alone is proper food).

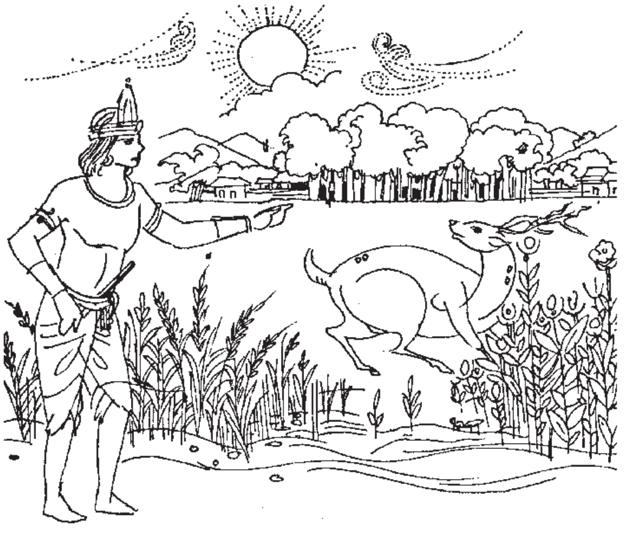
Such is the Indian insistence on the discipline of obtaining a plenitude of food and sharing it in plenty.

India followed the discipline till recently

India it seems continued to follow this discipline till almost the present times. Texts of all ages from different parts of India emphasize the importance of ensuring an abundance of food and sharing it widely before eating for oneself. Even a Buddhist Tamil text like the Manimekalai, which pointedly disparages the *vaidika* tradition in many ways, tells the touching story of Aputran who, being left alone on an uninhabited island with an inexhaustible pot of food in his hands, prefers to die of hunger rather than eat for himself from that pot, without sharing it with anyone else. And the older people in at least the state of Tamilnadu still remember how their parents used to wait outside the house before every mealtime for some seeker to come and accept food from their hands, and on the days that no seeker appeared the parents went hungry too.

The story of Harsavardhana, the renowned seventh century Indian king, who used to empty his treasury every few years and share his riches with his people is well-known. And when Hiuen-Tsiang, the revered Chinese scholar who visited India during the reign of Harsavardhana, describes the festivals of sharing that Harsavardhana organized, it reads almost like the descriptions of grand giving and sharing that happened unceasingly during the great yajnas of Srirama and Yudhisthira and other celebrated kings of classical antiquity.

Even as late as the beginning of the nineteenth century, the kings of Thanjavur seem to have cared as deeply about assuaging the hunger of all within their kingdom as the kings of Indian antiquity. In a fascinating letter written by Raja Sarfoji, the king of Thanjavur, in 1801 to the British who had by then set themselves up as the colonial overlords, the Raja describes the *chatrams* that abounded in his state, especially along the road to the great pilgrim centre of Rameswaram, and which had been running since the times of his ancestors. In these chatrams all comers received food throughout the day, and at midnight bells were rung to call upon those who may have been left behind to rush and receive their share. The Raja goes on to describe in detail how the chatrams took care of those who fell sick during their stay, and of the dependents of those who happened to die there. The running of the chatrams, the Raja felt, was what gave Thanjavur the title of *dharmarajya*, and this was the title, the Raja told the British, he valued above all other dignities of his office. And he implored the British to ensure that whatever else might happen to his state this tradition of providing for the hungry was not abridged or eliminated.



The king of Thanjavur it seems was amongst the last representative of not only the tradition of feeding the hungry, but also the Indian tradition of growing aplenty.

Historical evidence from different parts of India from around the tenth century to the beginning of the nineteenth indicates that lands throughout India used to yield an abundance. Inscriptions from the Thanjavur region from 900 to 1200 A.D. record yields of between 12-18 tonnes of paddy per hectare. An 1100 A.D. inscription from South Arcot, neighbouring Thanjavur, mentions yields of 14.5 tonnes per hectare, and another inscription of 1325 A.D. from the relatively dry Ramanathapuram records production of 20 tonnes of paddy on a hectare of land. Similarly high levels of productivity were reported by the European observers from many parts of the country. Thus, for productivity of foodgrains in the region around Allahabad, one such observer in 1803 reported a value of 7.5 tonnes per hectare, and another reported a yield of 13.0 tonnes of paddy from Coimbatore in 1807.

We have fairly detailed information about production and productivity that prevailed in about two thousand localities in the Chengalpattu region surrounding the city of Madras in the 1760s. The best lands in the region, according to this information, produced as much as 9 tonnes per hectare at a period when the British and French armies were crisscrossing the region and subjecting it to much devastation. The average of the region was a modest 2.5 tonnes of paddy per hectare. Nevertheless it amounted to the availability of as much as 5.5 tonnes of foodgrains a year for an average household of between 4 to 5 members, which represents a very high level of prosperity, not merely by the Indian standards of today – which happen to be abysmally low – but also by the standards of the most prosperous in the world.

Thus did India follow the discipline of growing aplenty and sharing it in abundance.

The British destroy the discipline

But with the coming of the British the abundance of the lands disappeared almost overnight as it were. In the Chengalpattu region, which was one of the earliest in India to come under the British rule, the relatively modest average yields of 2.5 tonnes per hectare observed in the 1760s had come down to a mere 650 kg per hectare already in 1788. The yield of lands seems to have persisted around this low level almost throughout India during the whole of the British period. Average productivity of paddy in India in 1947 at the end of the British rule was less than a ton per hectare, that of wheat around 700 kg, and of the coarse grains much below that figure.

Availability of food per capita also declined precipitously, leading to the unending series of famines that kept visiting India throughout the British period. In 1880, when the British had their first serious look at the problem of famine, they estimated the available food to be around 280 kg per capita per year, which is to be compared with the availability of around 5.5 tonnes per household in the Chengalpattu of 1760s. Estimates of actual production in the 1890s, when the first systematic data was collected, turned out to be nearer 200 kg per capita per year. India's production remains near this figure even today.

Thus did the British convert the traditional plenty into a scorching scarcity that persists with us till now. Also, they institutionalized the scarcity by forcibly deflecting the Indian polity away from its tradition of sharing. The institutional arrangements that the Indian kings had made for providing for the seekers, like the chatrams that the Raja of Thanjavur mentions in his letter of 1801, were unacceptable to the British from the very beginning. They insisted on withdrawing with a heavy hand the resources that used to flow to these institutions. Their insistence on such withdrawal of resources was so great that Richard Wellesly, the governor-general of the East India Company at the time of the conquest of Mysore in 1799, found it necessary to warn Diwan Purniah of dire consequences in case he indulged in the alienation of state revenues to such institutions. Purniah, who had been re-appointed the Diwan by the British to administer Mysore on their behalf but in the name of the hereditary ruler of Mysore, promptly reduced the resources assigned to such institutions from 2,33,954 to 56,993 country pagodas in the very first year of the new administration.

In addition to scorching the lands and stunting the polity, the British polluted the minds of the Indians by turning them away from their discipline of giving before eating and towards a callous indifference to the hunger and want of others. The sharing that the Indians practised as a matter of the inherent discipline of being human, was disdained by the British as a wasteful habit. And their disdain had such impact on the newly emerging elite of India that already in 1829, William Bentinck, the then governor-general of the Company could write that, 'Much of what used, in old times, to be distributed among beggars and Brahmins, is now, in many instances, devoted to the ostentatious entertainment of Europeans; and generally, the amount expended in useless alms is stated to have been much curtailed...'

The Indians who came under the sway of the British soon internalized the British judgments on the Indian discipline of sharing; the very first issue of Keshub Chandra Sen's Sulabh Samachar, dated November 15, 1870, carried an article against the evil of giving alms. 'Giving of alms to beggars is not an act of kindness,' the article proclaimed, 'because it is wrong to live on another's charity.' And the article went on to suggest that incapacitated beggars should instead be trained to do 'useful things for society.' This attitude of demanding work of those who do not have enough to eat has over time become a cliche among the relatively well-off Indians, especially those who claim to have acquired a modern and rational consciousness.

However, in spite of all the efforts of the British, the habit of sharing before eating remained widespread enough for the famine commission of 1880 to fret about its consequences on what they described as the administration of famine. They were afraid that such caring by the people themselves may detract from the majesty and the sovereignty of the state and recommended:

'Native society in India is justly famous for its charity.... Such charity is to be encouraged at the beginning of distress;... but when famine has once set in with severity it may become a serious evil unless it can be brought under some systematic control. ...When once Government has taken the matter thoroughly in hand and provided relief in one shape or another for all who need it, and a proper enclosed place of residence for all casuals and beggars, street-begging and public distribution of alms to unknown applicants should be discouraged, and if possible entirely stopped.'

Incidentally, in the Indian scheme of things it is indeed the uninvited and unknown seeker at the door who is honoured by the name of *atithi* and who has to be sheltered and fed with great ceremony and respect by the householder for his daily discipline, of feeding others before eating for oneself, to be properly accomplished.

As against the great ceremony and respect that the Indian tradition insisted must be bestowed upon a seeker, the relief that the British administration provided in times of famine, and which according to the famine commissioners justified their discouraging, if not completely banning, the Indian tradition of caring for others, consisted in providing a survival wage, 'sufficient for the purposes of maintenance but not more,' in return for a day's hard labour at specially organized worksites. For those whose health had deteriorated beyond the possibility of work, the commissioners recommended provision of 'dole' after due examination by inspecting officers, and the dole was to be withdrawn as soon as a person, in the eyes of the inspecting officer, began to look fit enough for work. Even from women 'who by national custom' were 'unable to appear in public,' the commissioners expected work, in the form of spinning cotton for the state, in return for the dole of grains provided to them and their children.

Such was the horror that the British administrators felt for the 'gratuitous' giving out of food, which for the Indians is the very essence of being human. The famine commissioners' report of 1880 became the basis for the creation of an elaborate bureaucracy for the management of relief and distress, and the judgments and sensibilities of the British thus became institutionalized into state-controlled mechanisms for commanding the supply and distribution of food, that remain with us till today.

In spite of all this the ordinary Indian – till recently – retained some sense of the discipline of endeavouring to have a plenitude of food and sharing what one has with others before partaking of it oneself. However, the continued scarcity and the almost total conversion of the mainstream of Indian public life to the western ways have so befuddled our minds that even the residual memory of the Indian ways seems to be finally fading. Amongst the more resourceful of the Indians there is not even a feeling of shame for the continuance of extreme scarcity or for the all-pervading hunger of people and animals around them.

We, who, as a people, used to be so scrupulous about caring for all creation have become callous about the hunger and starvation of people and animals. We know of the hunger around us and we fail to care. We, all of us together, all the resourceful people of India, bear this terrible sin in common.

The sin must be expiated

We cannot continue to live in sin. No nation with such a sin on its head can possibly come into itself without first expiating it.

We shall be liberated from the sin only when we begin to take the classical injunction of *annam bahu kurvita* seriously, and begin to grow a great abundance of food again. We have not so far taken to the task with proper application. It is true that during the last fifty years productivity of foodgrains has improved sufficiently to lift the national average to near two tonnes per hectare. But this average is quite below what was achieved in the eighteenth century in a relatively difficult and dry coastal terrain like that of Chengalpattu, and it is far below the level of productivity today in almost any other region of the world. In any case, the increase in productivity has taken place on about 30 percent of the Indian lands, which have high resources of capital and modern technology and which produce for the market. The remaining approximate 70 percent of the lands, large parts of which lie in the fertile plains of the bounteous Indian rivers, continue in the state of deprivation and neglect to which they were reduced during the British rule and continue to produce barely one indifferent crop a year.

With care and application these lands can produce the abundance that classical India cherished, and in the process can enliven large numbers of Indians who have been forced into economic idleness because of the idleness of the lands. Much is said about the growing population of India that has made it difficult for the lands to feed them all. But India is a country endowed with rare natural abundance. Unlike almost any other major region of the world, India is a country, where more than half of the geographical area is potentially cultivable, where almost every major geographical region is traversed by a great perennial river, and where the climate is so fecund that crops can grow throughout the year in almost every part. Notwithstanding her density of population, arable land per capita in India is still twice that in China and only marginally less than that in Europe.

The sin of scarcity shall be wiped off the face of India only when the idle lands begin to be looked after with care and attention once again, and the bounty that nature has bestowed upon India is converted into an abundance of food. We have of course been paying some attention to the lands and agriculture. But so far our concern has been to somehow achieve an average growth of around 2.5 percent per year to keep pace with the growth in population. We have not attempted to reach a level of growth that would remove the scarcity of the last two centuries, and make India a country of plenty. Achieving such plenty will require re-orienting all our resources and all our thinking towards the land. And once the Indian lands begin to yield a plenty, and the blocked vitality of the Indian people begins to flow again, other attributes of prosperity, which we have been trying so hard to acquire, will also arrive in abundant measure.

We should begin to pay attention to the lands and to the fulfilling of the inviolable discipline, *annam bahu kurvita*. But we cannot continue to be indifferent to the hunger around us until the abundance arrives. Because, as classical India has taught with such insistence, hungry people and animals exhaust all virtue of a nation. Such a nation is forsaken by the devas, and no great effort can possibly be undertaken by a nation that has been so forsaken. In fact, not only the nation in the abstract, but every individual grhastha bears the sin of hunger around him. We have been instructed, in the authoritative injunctions of the vedas, that anyone who eats without sharing, eats in sin, *kevalagho bhavati kevaladi.*

Therefore, even before we begin to undertake the great task of bringing the abundance back to the Indian lands, we have to bring ourselves back to the inviolable discipline of sharing. We have to make a national resolve to care for the hunger of our people and animals. There is not enough food in the country to fully assuage the hunger of all; but, even in times of great scarcity, a virtuous grhastha and a disciplined nation would share the little they have with the hungry. We have to begin such sharing immediately if the task of achieving an abundance is to succeed.

To us, Indians, sharing of food comes naturally. We do not have to be taught how to share, how to perform annadana. Because, we have been taught the greatness of anna and of annadana by our ancestors, and we have practised the discipline of growing and sharing in abundance since the beginning of time. For such a nation to obliterate the memory of a mere two centuries of scarcity and error is a simple matter. Let us recall the inviolable discipline of sharing that defines the essence of being Indian. Let a great annadana begin again through the whole of this sanctified land. Let a stream of anna begin to flow through every locality of the country. The abundance will surely arrive in the wake of such annadana.

J. K. Bajaj and M.D. Srinivas

Sharing food in India today

The above article is based on the book, *Annam Bahu Kurvita: Recollecting the Indian Discipline of Growing and Sharing Food in Plenty*, written by J.K. Bajaj and M.D. Srinivas and published by the Centre for Policy Studies, Chennai.

The statistical information on food availability in the article is largely based on the Food and Agriculture Organization data for 1990. More detailed figures are available in a 1995 compilation of the Indian Economy and Polity, also published by the Centre. Since reporting on these indices has changed form ever since, we are unable to provide more up to date data.

Jatinder Bajaj and M.D. Srinivas spent several years in the exhumation of data on how India functioned prior to the disruptions introduced by British and other colonialisms. Inspiration for much of their work came from the late historian, Dharampal.

Both authors are painstaking writers and their literary and intellectual output has left much of highly touted claims of the green revolution in tatters. They have demolished other historical shibboleths as well. About time too. This country cannot afford to continue to be brought up on myths of English historians. Bajaj's earlier work on the green revolution remains the standard work on the subject. It only needs to be updated.

A Note for Readers

Reviews of books in this *Sourcebook* are often brief, sometimes in the nature of a comment. Sometimes, the review includes an extract from the book itself. A grain of rice usually separates the review from the extract.

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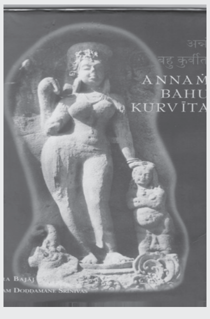
Annam Bahu Kurvita: Recollecting the Indian Discipline of Growing and Sharing Food in Plenty



by J. K. Bajaj and
M. D. Srinivas
(Available in Tamil, Hindi & English)

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In *Annam*, the authors have done great work drawing our attention to some useful Indian traditions which have simply refused to go away despite all the marvellous education we are supposed to have received from the English (nation of shopkeepers, according to Gandhi).

Some of these traditions are decidedly worth keeping. The enthusiastic feeding of people, family, remote family, friends, neighbours, strangers, animals, is a habit we should be proud of. Any one who wants us to give these up should get his or her head thoroughly examined.

We are proud that in this much maligned country, we still do things properly where food is concerned. Visitors must first be fed. Strangers, when they drop in at meal times, must be given a meal.

Temple trusts, Jain mandirs, Sikh gurudwaras, still feed thousands without batting an eyelid.

I recently visited the Guruvanmiyur Temple near Udipi in Karnataka and discovered to my delight that the temple fed approximately 75,000 pilgrims free every day! During special days, the temple could feed more than 300,000 without any discomfort.

I live in Goa where we have the annual Shirgao Zatra, where devotees are habituated to walking on glowing embers. Nearly half the population of Goa visits the village to participate in the temple festivities which last five days. This would be a population of around 500,000 devotees. One interesting aspect of the festival is the free availability of food throughout the five days of the festival in any home of the village (around 375 households). Any person visiting the deity can enter any home and he or she will be given a meal. Now the villagers of Shirgao are not rich folk by any standards. Yet, they feed the rest of the world without batting an eyelid and with a great sense of pride in that tradition.

I still cannot get over my experience of living in Europe where I found that I had to be specially invited to a meal. I discovered, much to my consternation, that uninvited guests – especially those who dropped in at meal time – were simply unappreciated. They would wait for you to leave and only then have their meal. In India, this would be considered a sign of bad upbringing. This went to absurd lengths. When I invited friends (Europeans) home for a meal casually, they would phone up my room mates later (who were of course Dutch) to confirm whether they had really been invited to a meal. I could only scratch my head in wonder.

And they call themselves 'rich countries'. They have so much food, they keep dumping it in the ocean or feed it to animals and then eat the animals in turn. Yet they display no generosity in offering their food to friends and colleagues, let alone strangers.

So who is developed and who is not? Who is rich and who is poor? Those who are ever ready and able to share their food, howsoever poor, or those who are habituated and culturally taught to think of feeding only themselves? What kind of rich people are these who cannot share food freely, even with strangers?

Read more about the work of Bajaj & Srinivas at their website: www.cpsindia.org

Claude Alvares

What we refer to as modern 'green revolution' agriculture in India is just about fifty years old, having been introduced in 1966 as a result of considerable arm-twisting by private, so-called philanthropic foundations from the United States of America, in order to create a market for their countrymen's agribusiness corporations.

In contrast, agricultural practice in India dates back more than 4,000 years. Indian agriculture therefore could be called a self-sustaining agriculture simply because it has maintained soil fertility over this enormously huge period of time. This is permaculture at its best.

Something similar could be said of China. F.H. King's book on agriculture in China is aptly titled, *Farmers of Forty Centuries*.

Any farmer interested in sustainable agriculture would therefore look first at the older Indian (and Chinese) agricultural practices – many still extant – for important and time-tested guidelines, principles and techniques. However, because our brains have been collectively damaged by the acidic effluent discharged by Macaulay's education system, we know precious little of the older techniques.

Most of the literature on traditional Indian agriculture has surfaced only over the past three to four decades, though it might have been available earlier. A good deal of it in the local languages is still awaiting discovery, translation and assessment.

To provide just one example, we have in Kannada a book called 'Krishi Jnana Pradeepike' (Treatise on Agricultural Science). The author was Sri Nagabhushana Ghanamatha Shivayogi who lived more than a hundred years ago. The translation of the book into English has recently been done by the Asian Agri-History Society. Naturally this treatise does not figure in the knowledge of any of the agricultural universities or their libraries. Neither does it even figure in the heads of agricultural scientists all of whom make a living promoting an agriculture they never invented but were merely drafted to extend.

In 1911, a Konkan farmer named Mahajan wrote a book on agriculture called 'Vanaspati Samvardhan Shikshak.' A revised edition was published in 1922. We do not have copies today.

CHAPTER TWO

The Traditions of Raising Food

It is about time everyone concerned with farming was persuaded to look at the wealth this country has produced in terms of agricultural techniques, science and creativity. In the following chapter, we intend to give the reader a sampling of the best available material, fully conscious that the greatest amount is still to be translated, collated, researched and what we really have exposure to is just the tip of the iceberg. The real history of Indian agriculture has not even begun to be written. When it is done and completed we shall wonder how we ever allowed ourselves to be mixed up with the more primitive agricultural system imposed on us by the West.

Indian agriculture was sold to us as deficient and inferior and incompetent to feed a rising population. This great lie, produced by the agribusiness lobby and its agents including our agricultural institutions, has no historical basis. Whatever documents and data we have suggest just the opposite.

A civilization that lasted more than 4,000 years could not have done so without agricultural competence. Neither was this only an agricultural society – there were numerous industries that were able to meet global demands. A flourishing agriculture made possible a range of extraordinary technical skills reflected in handicrafts. These even today dazzle the world. In comparison with them, the plastic objects of the modern economy appear as so much trash.

The maintenance of soil fertility was so competent that quality time was left for the most important pursuits of religion and culture. This was reflected in awesome mythic tales, dance, music, the constructions of amazing temples, and a host of recipes that have made this country one of the most extraordinary culinary civilizations of the world.

Sustainability of indigenous agriculture

The Indian traditional agricultural system has proved itself sustainable. Many of the practices developed centuries ago, by farmers themselves, not by agricultural 'experts', are still in use today. More important, the culture that promoted such farmer experimentation still exists, in spite of the pressures of the Western system to destroy it. Thus, new sustainable practices are being researched and those that have been lost because of external pressures, not because of inherent unsustainability, could be revived. Such an agricultural system could provide the basic essentials, even for a growing population, though not, naturally, the superfluous wants which the Western system promotes. (From *Tending the Earth*, p.1.)

◆

In addition to 'conserving' soil and preventing it from degrading further, traditional practices increased its fertility by incorporating organic supplements and by proper crop rotations.

Organic matter improves soil quality by increasing granulation, water infiltration, and the activity of soil micro-organisms which in turn improve the soil fertility.

The quality of the soil, which is basically made of fine grains of sand or clay, depends on the formation of grains into aggregates. The size, stability and the space enclosed between and within the aggregates determines the retention and movement of water diffusion of gases and growth and development of roots in the soil. The aggregates are stabilized by organic and inorganic cements, clay or microbial films. The aggregates also provide a large surface area to which plant nutrients adhere. The capacity of the soil to hold such nutrients is an indicator of the potential fertility of the soil. Organic matter in the soil increases granulation.

The organic matter decomposes into components which plants assimilate, and so needs to be continuously replenished to maintain a good structure of the soil. The faster the organic materials decompose the greater is their effect upon aggregation. Green manures have a longer lasting effect than straw. Earthworm casts formed by cementation of soil particles in their intestines is quite stable. Soil flora and fauna cause aggregation due to mechanical binding by fungi and actinomycetes and cementation by products of decomposition and synthesis by bacteria. Plants develop new roots and decompose the old ones for the formation of stable aggregates.

Organic matter in the soil improves its tilth. The better the tilth, the more easily the soil can be tilled, the easier it is for seedlings to emerge and for roots to extend downward. The better the tilth, the less work the draught animals have to do.

Sweet potato is used to improve aeration since it thrives in conditions which would choke other crops, its swelling roots shattering the soil for the next crops. Without a supply of oxygen the rootlets cannot breathe and the plant perishes.

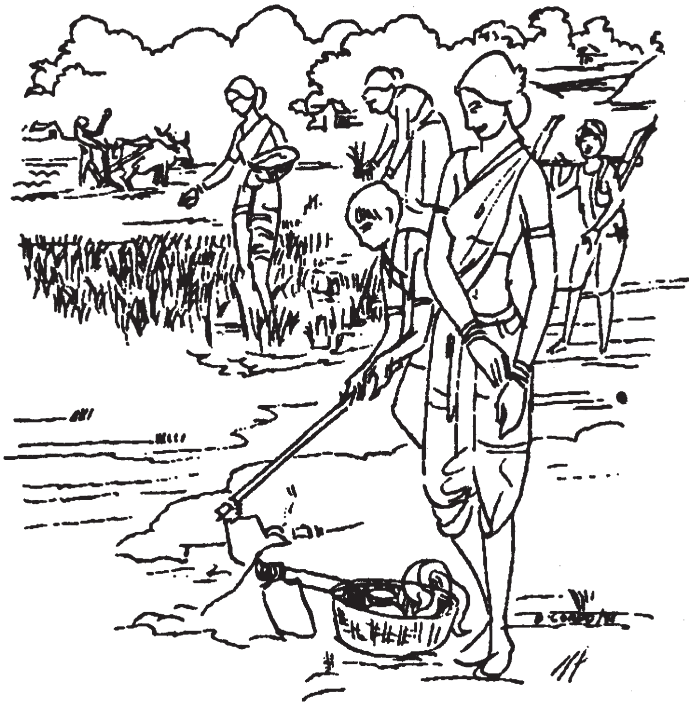
Deep rooted plants contribute to soil formation as their living roots quickly corrode limestone, basalt and sandstone.

Soil is also improved considerably by the presence of creatures that break down surface organic matter and larger soil particles into finer ones. For instance, the small stones ingested by earthworms to break down the leaves consumed by them get ground down into fine soil in their systems and are ejected together with other wastes as casts around their burrows. In this process, soil is continuously brought up from below the surface. Since large stones cannot be swallowed by the earthworms, these gradually get buried under the casts, thus improving the top layer of the soil. Earthworm burrows extend several centimetres below the surface and increase the penetration of air and water into the soil. The roots of plants often follow the tunnels downwards but whenever they pass casts fine roots branch out to extract the nutrients from them.

Indian earthworms are only active during the damp conditions of the monsoon. Some foreign species are active throughout the year but they require continuous moist conditions for their survival. Such conditions occur only under intensively irrigated cultivation.

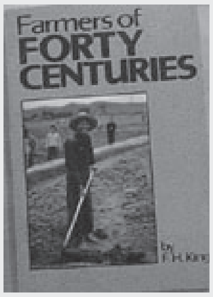
Earthworms are only one of a range of numerous burrowing creatures – ants, dung beetles, rats, snakes, and several others –which improve the soil. They turn the soil, enrich it, drain it and air it. They consume perhaps 90 percent of the corpses of small animals, recycling the nutrients quickly. Birds swallow small pebbles to grind down their food in their gizzards and so produce soil.

Termites are usually regarded as harmful, but in addition to assisting the transformation of vegetable matter into humus



Forty centuries of farming in China

Farmers of Forty Centuries: Permanent Agriculture in China, Korea and Japan.



By F.H. King,
(1911)

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'It could not be other than a matter of the highest industrial, educational and social importance to all nations if there might be brought to them a full and accurate account of all those conditions which have made it possible for such dense populations to be maintained so largely upon the products of Chinese, Korean and Japanese soils.'

So begins this classic on the farming traditions of the Orient. It was written when agriculture was still a culture. It shows us how painstakingly the farmers of old kept up their tradition of fertility, production of quality and quantity, and mind you 'sustainability' (40 centuries!). You can equally read that there was no need of any breakthrough, such as the green revolution, but of social adjustments, empowerment of the peasants. One more book never read by the fathers of the green revolution.

— Bernard Declercq

* * *

How thorough is the tillage, how efficient and painstaking the garden fitting, and how closely the ground is crowded to its upper limit of producing power.

* * *

Not only are these people extremely careful and painstaking in fitting their fields and gardens to receive the crop, but they are even more scrupulous in their care to make everything that can possibly serve as fertilizer for the soil or food for the crop being grown, do so unless there is some more remunerative service it may render.

* * *

Everywhere we went in China, the laboring people appeared generally happy and contented if they have something to do, and showed clearly that they were well nourished. The industrial classes are thoroughly organised, having had their guilds or labour unions for centuries...

* * *

'Man is the most extravagant accelerator of waste the world has ever endured. His withering blight has fallen upon every living thing within his reach, himself not excepted; and his bosom of destruction in the uncontrolled hands of a generation has swept into the sea soil fertility which only centuries of life could accumulate and yet this fertility is the substratum of all that is living (p.190-191)...to such loss modern civilisation is adding that of hydraulic sewage disposal... The Mongolian races...occupying an area little more than one-half that of the United States...during twenty, thirty of perhaps forty centuries; unable to avail themselves of mineral fertilizers, could not survive and tolerate such waste.' (p.197-198) they are most useful as aerating agents. Their deliberate destruction must lead to an overall loss in productivity.

It is possible that good topsoil that was lost by erosion is rapidly restored by such creatures, since there are a wide range of them around, but only if there is sufficient organic matter for their needs. Synthetic pesticides are now responsible for the destruction of many of them.

The most important characteristic of traditional agriculture was that there was little waste: no polluting dung mountains, no burning of straws, no wastes from polluting village industries. Almost all the nutrients that were harvested and exported – in the grain, the straw and any other crop residue – were returned to the micro-region itself, directly or indirectly, sooner or later. Crop by-products, such as paddy husk, wheat bhusa or sugar cane trash were all returned to the soil.

After the harvest, the roots remained in the soil, the straw and leaves were returned to the soil as mulch or manure; hardwood stems burnt as fuel and the ash used as manure. Some were returned when straws or leaves were consumed by livestock and the animal dung used as manure. In addition to contributing nutrients and organic matter, crop residues left on the land also protected the soil from erosion and rapid water runoff. Part of what was consumed by humans in the locality also went back to the soil as manure. In addition, insects and other creatures helped speed up recycling. Insects chewed off leaves and their droppings served as fertilizer, or the insects and fruits were eaten by birds and other creatures, and their droppings became fertilizer. Leaves or whole plants died off and fell to the ground and rotted.

The recycling was continuous and local which enabled a large diversity of plants and animals to be supported by a particular quantity of nutrients, passing through multiple food chains. Productivity was increased by recycling nutrients faster. It was not the soil nutrients that were often limiting production, but the rate of recycling of nutrients.

The by-products of village industries such as oil cakes from oil mills and indigo wastes, were returned to fields. Oil cakes, traditionally used on a large scale, were a rich source of nutrients, providing all the main requirements and served other diverse purposes too. Oil cakes that were edible by cattle served as feed before being returned to the soil as dung, while those that were not were directly incorporated into the soil. (From *Tending the Earth*, pp. 198-199)

The Destruction of the Traditional Rice System

The sustainable systems of paddy cultivation were destroyed by many means. The enclosure of the forests reduced nutrient availability and so reduced paddy productivity. It was noted, about a hundred years ago, that while thousands of tonnes of tree trunks were allowed to be used for fuel for railway steam engines, paddy farmers were prohibited collecting the unused side branches and leaves for rab. Paddy land was converted to the cultivation of jute and indigo. Rice was exported to Britain, mainly for brewing alcohol and for industrial starch.

The "modernisation" of Indian agriculture has resulted in a loss in self-reliance, sustainability and security on the part of farmers and the country as a whole. The greatest reduction in sustainability occurring with the replacement of the thousands of traditional varieties by a few High-Yielding Varieties (HYVs) in the last few decades. Moreover, the germplasm of thousands of traditional varieties has been appropriated by the so-called International Rice Research Institution (IRRI).

The loss of self-reliance occurred due to the increasing dependence of farmers on outside inputs of seeds, fertilizers, pesticides and energy. The high susceptibility of HYVs to pests makes cultivating them very risky for farmers as well as the country as a whole. The West now promises farmers that biotechnology will revolutionise paddy production, acknowledging the failure of HYVs.

At present most of the paddy straw of HYVs is burnt in the field as heavily indebted farmers must sow another crop immediately after they reap, leaving no time for the straw to be composted. The loss to the farmer of fodder and fertilizer is not accounted for.

There are suggestions to use the straw for the generation of power, which is better than just burning it, but still not sustainable. It is claimed that the total power generating potential of paddy straw in Punjab is around 1600 MW. When – not if – oil prices rise and tractors become uneconomical to use, then the existence of such power stations would effectively prevent the reintroduction of draught cattle – the only possible alternative to tractors – because the price paid for the straw would preclude its more sustainable use.

Flooded rice fields store an enormous quantity of water, releasing it slowly into nallas or allowing it to seep underground to recharge the water table. Their development has played and still plays a large part in regulating water flow and soil erosion after heavy rains. But there have been 'expert' recommendations to abandon rice cultivation completely and promote instead fruit production, because of the higher economic yields of the latter. If this was done in heavy rainfall areas, large scale flooding would inevitably follow. Moreover, fruits and vegetables cannot be stored to cover drought years or other losses as cereals can. The new agricultural policies of promoting crops which can be processed and exported could have similar results. (From *Tending The Earth*, pp.115-116).

* * *

A typical Kerala home garden is a good example of what is possible today. One, with a total area of only 0.4 ha, had an incredible number of species with an equally amazing number of uses. It had 16 cultivated herbs, 31 species of trees and 13 ornamental plants. Most supplied food, and the rest fodder, fuel, fibres, manures, mulches, medicine, timber, sugar and spices, beverages, cosmetics and cash. Some provided support and shade for the other plants. Some were considered snake repellent, others had religious and cultural significance. Several were ornamental. Most had multiple uses, including the ornamental, and most had more than a single specimen.

The food species provided fresh vegetables and fruit, storable tubers, and several fruits that could be pickled and preserved. Such home gardens are of particular help to women, who obtain much of their daily needs free and with little effort. Species range from ground creeping Portulaca species, to grasses, to the towering teak. Some were annuals others took years to mature. And the whole kept the place cool and shady in a tropical climate.

In recent experiments in orchards, when the fruit trees are young, grass and other crops are planted in between. Later, agasta is grown in rows between fruit trees, which are spaced 8 to 10 m apart. Agasta grows tall but its crowns absorb only 25 per cent of sunlight, so the young fruit trees are not affected. In between the agasta, other legumes are planted. The agasta and legumes drop leaves and flowers continuously.

However, trees cannot replace annual cereal crops, as has often been suggested, though the former may give a productivity several times higher by weight than cereals, while using less labour and providing more cash income. This is because storage of food for off-season and drought use is essential for security. Most fruits cannot be stored without elaborate processing, while foodgrains and pulses can. Those who promote fruit tree cultivation as a cash crop assume that some other farmer will grow the grains that the cash cropping farmers need to live on.

Farmers are also now encouraged to use irrigation, fertilizers and pesticides. Indigenous fruit trees do not require these, otherwise they would not have survived for the thousands of years they grew before their cultivation began. Irrigation is required only when exotic fruit trees are grown and when indigenous fruit trees are desired to be cultivated in areas in which they are not native, or when they are to be forced to mature earlier. (From *Tending The Earth*, pp.88-89).

* * *

Several methods of controlling pests are used.

In a village in Tamil Nadu, farmers plant in every tenth row a variety of rice which is highly susceptible to stem borers. The insects feed only on these rows and leave the rest untouched.

Farmers say that the use of synthetic fertilizer causes pests to increase, with too much nitrogen fertilizer enhancing plant hopper populations, increasing the severity and incidence of paddy blast, of brown spot, and of bacterial blight. The use of organic manures, reduces the pest problem, or rather returns to the pre-synthetic era which has less pests.

If sucking pests appear on the crop, they are repelled by spraying a preparation of 4 litres of cow urine and 10 grams of asafoetida in 10 litres of water. Paddy blast is controlled by spraying with a mixture of 3 kg cow dung in 10 litres of water, after proper straining. A decoction of bael leaf, 100 gms leaf boiled in 2 litres of water, cooled and added to 100 litres of water and a few litres of cow urine control diseases of rice.

Ploughing and flooding the field are most effective in killing the larvae of stem borers. Crop rotation with crops that are not grasses help in reducing borer population. Plants given high rates of nitrogen fertilizers are preferred by stem borer moths for egg laying and the plants become more suitable for larval growth. Green manuring with prickly sesban (dhaincha) or sann reduces sheath blight. Spraying of cow dung slurry (2 kg/10 litres of water) can minimise disease development and spread of bacterial blight.

Whenever mealy bugs attack rice crops, the place of attack is demarcated and after the harvest is over the demarcated area is burnt to arrest recurrence of the pest. Further, ak leaves are applied to the field as 'green manure' to control this pest.

For controlling thrips the rice nursery is irrigated, so as to submerge the plants for some time and the water drained to wash away the insects.

Mesta seeds are sown, intermixed with rice, in upland dry rice fields for controlling termite attack. Roselle (lal ambadi, patwa) is considered better than mesta.

In Sri Lanka, wicks made of discarded monk's robes are soaked in coconut oil and burned; the yellow vegetable dye burns with a bright light and emits a very strong smell that repels rice pests. Also, bamboo leaves were buried in inlets if paddy plants turn yellow.

Flooding rice fields early in the season, for 7 days is 95 to 100 per cent effective in controlling the yellow stem borer. Other practices include trapping insects and draining standing water in rice fields. Hand removal of the weed rice grass (jangli dhan) controls the gall midge, which overwinters on the weed.

Another major pest of rice, the paddy armyworm, has been controlled by digging and oiling trenches across the larval line of advance.

The paddy fly has been controlled by trapping with spoiled meat and uniform local planting to restrict flowering period. Mechanical control means have been used, including netting fly swarms with large bag nets in India and dragging large bags (coated on the inside with oil emulsion) across the growing crop in Malaysia. The paddy fly can also be controlled by pyrethrum and derris dusts. Drawing gummed ropes across the field causes insects to stick to them.

A crushed paddy bug put into a dead crab shell is placed in a hole dug to about 50 cm deep. It is said that paddy bugs come down from earheads to the base of the paddy plants; this may act as a pheromone.

The cultivation of rice over millennia has allowed a wide range of pests and diseases to develop, but with them also evolved predators and parasites which controlled them. Without such co-evolution the cultivation of rice would have been impossible today. A typical rice field in the tropics supports 800 species of 'friendly insects' – spiders, wasps, ants and pathogens that, if recognised and protected, will control 95 per cent of insect pests without synthetic pesticides. However, the damaged environments may require some pest control now.

Trees in or near fields provide perches for a large variety of predatory birds. Bamboos and other plants are staked in the fields for the same reason. These are sufficient to take care of plant and leaf hoppers and most other pests. The important brown plant hopper predators are spiders and water striders. A single wolf spider in a rice field can eliminate at least 20 brown plant hoppers in a day. Leaf-folders are controlled by several insects, including predatory beetles. A tiny wasp parasite lays eggs inside leaf-folder larvae. Another wasp parasitises the eggs of the black bug.

In some areas ducks are allowed inside the fields after the harvest of the short term rice crops to eat snails and insects in the stubble.

It has recently been found that there are complex relationships between weeds and pests, which bring out the importance of all the former to flourish, not only on the edges of fields but also among the rice plants themselves.

There is firm evidence to show a relationship between presence of weeds of Echinocloa species and bird damage. Some farmers purposely grow samak (sarvank) alongside rice, because the long awns of its spikelets drive the birds away.

Other rice pests show contrasting behaviour patterns with respect to the presence of weeds. Defoliation by green semiloopers, green hairy caterpillars and the whorl maggot was found to be greater in plots which had been weeded. However, caseworms and leaf folders were found in greater numbers on unweeded plots. Probabilities are that the higher numbers of caseworms and leaf folders were entrapped in the thick foliage, while the presence of weeds made the water inconspicuous to adult green semiloopers, hairy caterpillars and whorl maggots which were not attracted to egg laying.

On upland rice, weeding during the first month after seedling establishment forced armyworms, which have a preference for grassy weeds, on to the rice plants.

The relationship between weed hosts and insect pests may involve natural enemies. Parasitisation of the swarming caterpillar and the common cutworm by a tachnid fly was found to be greater on weedy fields containing the weed species Rottboellia and Amaranthus than on weeded fields. The cricket, Metioche vittaticolis, is an important predator of eggs, nymphal/larval stages of many rice pests including eggs of leaf-folders and striped stem borers and the young nymphal stages of Brown Plant Hopprtd (BPHs) and green leaf hoppers. The cricket prefers to lay its eggs on weeds including Fimbristylis miliacea and Monochoria vaginalis (nanka), two weed species commonly found growing with rice.

Paddy yields have been sustained by preserving the complex eco-system of the flooded fields and their surroundings. As long as this micro-ecosystem is not interfered with, the natural fertilizing and insect control processes enable a paddy field to yield steadily for thousands of years. (From *Tending The Earth*, pp.106-109)

Return to Sustainability

A return to traditional practices will naturally be a return to sustainability.

Outputs can also be raised by using traditional varieties. In the uplands of Orissa and West Bengal where summer rice is grown, traditional varieties have not yet been replaced by HYVs since water is not adequate and the farmers cannot afford fertilizers. The farmers needed a rice variety which gave reasonably high yet stable yields under adverse conditions, one that matured quickly before the soil becomes dry. Two traditional varieties called annada and rasi were found which gave good yields even when directly seeded. The farmers also discovered that it was more profitable to intercrop these early varieties with groundnut. In addition, they found that annada and another early rice variety called kalinga-3 are well suited for cultivation in summer, with jute in succession, followed again by a rice crop at the end of August.

In the coastal, low-lying areas in the district of 24-Parganas, farmers often raise one crop of rice and abandon the land when it gets inundated. This was avoided by digging a quarter of the field deep enough to raise fish. The dug out earth was used to raise the height of the remaining part of the field on which quick-maturing rice varieties were grown in sequence with other crops. The land was fortified with broad field bunds, on which high-value vegetables were raised.

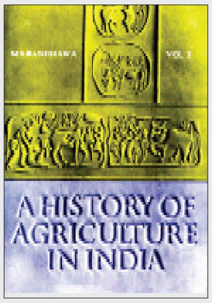
In most of their small holdings, marginal farmers often raise only one crop of rice. On odd pieces of moist land in backyards and farms some farm women started cultivating a sedge, gula methi. The sedge provided raw material from which women wove mats in their spare time and sold them in the local market, each woman earning about Rs 20 a day.

It may be necessary to introduce rab in other areas if the climate changes to make monsoons shorter and more erratic.

The use of traditional techniques can raise the sustainability of paddy cultivation considerably, at little cost and risk to farmers. (From *Tending The Earth*, pp.116-117).

India's Agricultural History

A History of Agriculture in India



By M. S. Randhawa
Indian Council of Agricultural Research.

Vols.I (pp.541), II (pp.358), III (pp.422) & IV (pp.716) (HB)

M.S. Randhawa is a retired agricultural scientist who writes on a variety of subjects dealing with agriculture. The reader should note that Randhawa spent most of his days promoting chemical-based farming.

This four-volume history is quite unique in many respects. It is the first truly panoramic view of what happened on the Indian subcontinent and is a must for any person who wishes to have some idea of traditional agriculture over the ages.

The books have no great literary style since they are written by a bureaucrat. However, Randhawa occupied a high position and was therefore able to requisition an enormous quantity of research material on the subject.

The first volume deals with the beginnings of agriculture in India and ends up with the eleventh century.

The second volume deals with the period 1206-1761. The third volume deals with the period 1757-1947 while the final volume is wholly devoted to the post-independence phase, that is, from 1947-1981.

Any one interested in the subject of Indian agriculture will need to have this on his/her shelf. — C.A.

* * *

How did the Harappans protect their crops? Terracotta sling-balls are found in all Harappan excavations. Possibly, the farmers used these sling-balls for scaring away pests. Slings and sling-balls are even now used by the farmers for protecting the maize crop in the submontane areas of northern India. A boy armed with a sling standing on a machan in the midst of a field of maize is not an uncommon sight. (Vol.I)

* * *

...one of the major factors of the decline and fall of the Harappan culture was the widespread deforestation of the surrounding region to meet the demands of firewood for baking millions of bricks used for the building of the city of Mohenjo-daro. Large scale use of wood for baking pottery, smelting metals, and as domestic fuel further depleted the forests. The building of houses and ships also made demands on the forest reserves. The clearing of land for cultivation and grazing by domestic animals were other biotic factors which led to the destruction of vegetation...Though the Harappan cities were destroyed by the invaders, the achievements of the Harappan culture, viz. the use of copper and bronze, pottery, the plough, the bullock cart and irrigated farming were adopted by the Aryans.

In the Kullavagga, Mahanama the Sakyan, while telling Aniruddha what is incident to a household life, gives a short list of farming operations. "First you have to get your fields ploughed. When that is done, you have to get them sown. When that is done, you have to get the water led down over them. When that is done, you have to get the water let off again. When that is done, you have to get the weeds pulled up. When that is done, you have to get crops reaped. When that is done, you have to get the crop carried away. When that is done, you have to get it arranged in bundles; when that is done, you have to get it trodden out. When that is done, you have to get the straw picked out. When that is done, you have to get all the chaff removed. When that is done, you have to get it winnowed. When that is done, you have to get the harvest garnered. When that is done, you have to do just the same next year and the same all over again the year after." (Vol.I)

* * *

After describing the fruit-trees, Ibn Battuta gives a detailed account of cereals which Indians sow and use for food. 'The Indians sow twice a year,' states Ibn Battuta. 'When the rain falls in their country in the hot season they sow the autumn crop, and harvest it sixty days later. Among these autumn grains in their country are kudhru (Paspalum scrobiculatum), a kind of millet, which is the commonest of the grains in their country; qal, which resembles the type of millet called anli; and shamakh, which is smaller in the grain than qal, and often grows without being sown. It is the food of the devotees and ascetics, and of the poor and needy. They go out to gather what has sprung up of this plant without cultivation; each of them holds a large basket in his left hand and has in his right a whip with which he beats the grain so that it falls into the basket. In this way they collect enough of it to supply them with food for the whole year. The seed of this shamakh is very small; after gathering, it is put out in the sun, then pounded in wooden mortars; the husk flies off leaving its pith, a white substance, from which they make gruel. They cook this with buffalo's milk and it is pleasanter, prepared in this way, than baked as bread; I used often to eat it in India and enjoyed it.

Other grains are mash (Vigna radiata), which is a kind of pea, and mung (V. mungo) which is a species of mash, differing from it in having elongated grains and in its clear green colour. They cook mung with rice and eat it with ghee; this dish they call khichri and they breakfast on it every day. It takes the place with them of harira in the lands of the Maghrib.

'Then there is lubiya (Vigna unguiculata), a kind of bean, and mut (Cyperus rotundus), which resembles kudhru but has smaller grains. It is used as fodder for draught animals in that country and fattens them; the barley in their country has no strength in it, and fodder for the animals is furnished by the mut or else by chickpeas, which they poundand soak with water before feeding it to them. In place of green fodder, too, they feed them with mash leaves, but first each animal is given ghee to drink for ten days, three to four pounds a day, and is not ridden during this time, and after that they feed it with mash leaves, as we have said, for a month or so.

'The cereals which we have mentioned are autumn crops. When they harvest these sixty days after sowing them, they sow the spring cereals, which are wheat, barley, chickpeas, and lentils. They are sown in the same ground where the autumn crops are sown for their land is generous and of good heart. As for rice, they sow it three times a year, and it is one of the principal cereals in their country. They sow also sesame, and sugarcane with the autumn grains that we have mentioned.' (Vol. II)

* * *

'This is the best provided city in the world', states Paes, 'and is stocked with provisions such as rice, wheat, grains, jowar and a certain amount of barley and beans, moong, pulses, horse gram, and many other seeds which grow in this country which are the food of the people, and there is a large store of these and very cheap; but wheat is not so common as the grains, since no one eats it except the Moors. The streets and markets are full of laden oxen without count.'

'Then to see the many loads of limes that come each day, such that those of Povos are of no account, and also loads of sweet and sour oranges, and wild brinjals, and other garden stuff in such abundance as to stupefy one. There are many pomegranates also; grapes are sold at three bunches a fanam, and pomegranates ten a fanam.'

'The tradition and experience of three thousand years have given them minute knowledge with regard to their own ancestral holdings; and he points out that they know to a day when it is best to sow each staple and each variety of each staple; they accurately distinguish every variety of soil, and the varying properties and capacities of each; they fully realise the value of manures; they know the advantages of deep ploughing, and thoroughly pulverising the soil; but they also realise where, with a scanty supply of manure, it would be folly to break the shallow-lying pan. As for weeds, their wheat fields would, in this respect, shame ninety-nine hundredths of those in Europe...' (Vol. III)

* * *

In the Second Plan period (1956-1960), controversy raged in the Government circles that organic manures alone should be promoted, as chemical fertilizers were harmful to the soil in the long run and were also costly. The most ardent advocate of organic manures was M.S. Sivaraman (b. 1907), Adviser to the Planning Commission, to whom the very mention of chemical fertilizers was like a red rag to a bull. I remember to have attended a meeting presided by Shri V.T. Krishnamachari, Vice Chairman of the Planning Commission, at which P.N. Thapar as the Secretary, Ministry of Agriculture, I as the Vice President of the ICAR, Dr Badri Nath Uppal, as the Agriculture Commissioner, and M.S. Sivaraman were present. Sivaraman said that the packets of the seeds of Sesbania aculeata (dhaincha) should be distributed among paddy-growers for green manuring and money should not be wasted on importing and manufacturing chemical fertilizers. Uppal cogently argued the case for chemical fertilizers. He argued that all the rural and urban compost and green manure that the country could produce was hardly sufficient for even a fraction of the total cropped area of the country, viz. 172,306,000 hectares. Thus even for fertilizing the irrigated areas of the country and areas with assured rainfall, the use of chemical fertilizers was necessary. Moreover, experiments had shown that a long-term use of chemical fertilizers was not harmful to the soil. (Vol. IV)

* * *

The productivity of Indian agriculture in the 18th century

In the last few years, along with some friends, I have been looking at the records of a survey of about 2000 villages in the district of Chingleput (Chengalpattu) adjoining Madras City in Tamil Nadu. The survey was carried out around 1770 on the instructions of his superiors by a British engineer, Thomas Barnard. Barnard collected detailed data about the area, soon after the area around Madras came under direct British control.

Other accounts of pre-British Indian agriculture have reported equally high figures for the productivity of cultivated lands in various parts of India. The *Ain-i-Akbari* records wheat productivity from middling lands which compares well with the highest productivity obtained in post-Green Revolution Indian agriculture. *The Cambridge Economic History of India* on the basis of the inscriptional records of the Chola period (10th-13th century AD) estimates that average produce from lands of various kinds in South Arcot district of Tamil Nadu may have been around 33 quintals per hectare, and some of the best lands in the relatively infertile Ramnad districts may even have been producing 66 quintals per hectare of paddy. For early 19th century Allahabad an observer reports productivity of about 40 quintals of wheat per hectare. Francis Buchanan travelling in southern as well as eastern India around 1800 estimates rice productivity of about 35 quintals per hectare from Coimbatore, and somewhat lower productivity for wheat from the Patna-Gaya area. John Hodgsen, a senior member of the Madras Presidency Board of Revenue, in 1807 estimated productivity of almost 60 quintals of paddy per hectare for the relatively better lands in Coimbatore. An early discussion on Indian agricultural productivity (about 3 times to that in England) was published in the *Edinburgh Review* around 1804. The *Edinburgh Review* also then commented that the wages of the Indian agricultural labourer were also much more than his contemporary British counterpart.

How does one explain the spectacular yields obtained by the Indian farmer? The explanation usually offered is that since the pressure of population on land was rather low, only the most fertile lands were brought under cultivation. This may be partly true. But this fact must have been equally applicable all over the world. Yet most observers seem to agree that yields obtained in India in the late 18th and earlier 19th century seem higher than the yields obtained in England in the last decades of the 19th century, after the discovery of the role of nitrogen in plant growth, and consequent agricultural revolution. The English farmers after about 1840 had started to use heavy doses of fertilizers, initially potash from mines of Germany, basic slag from the fast growing British steel works, and during 1840-1860 even importing millions of tons of guano from distant Peru, in South America, where heaps of guano (bird droppings) had accumulated over centuries. This fertilization was subsequently followed by synthetic fertilizers.

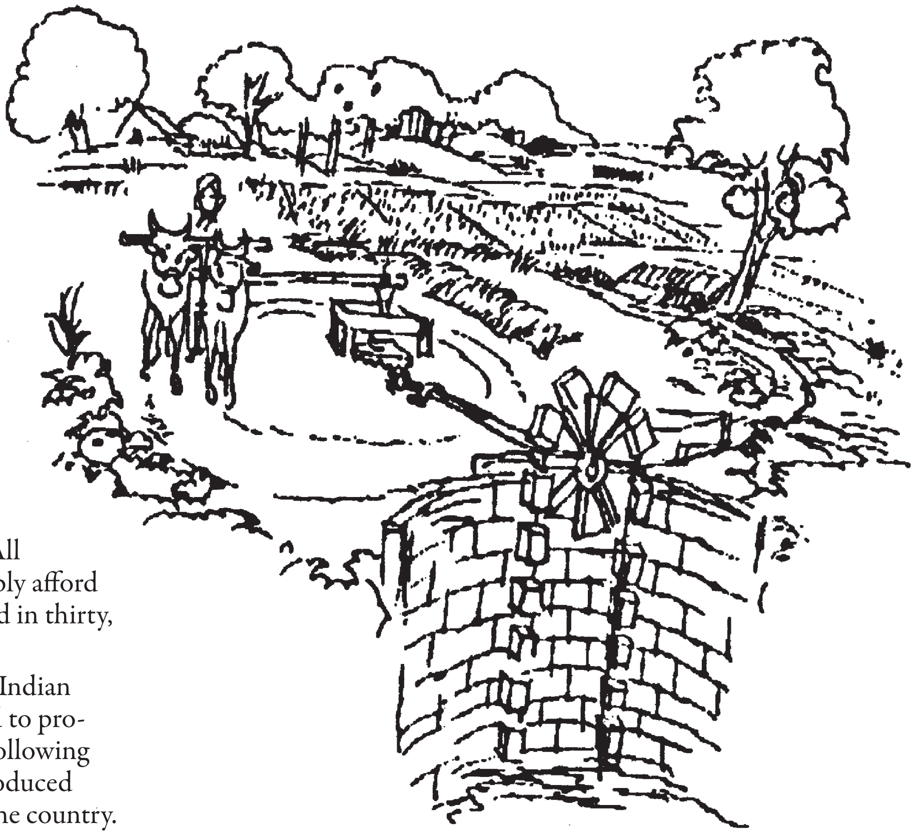
The high yields of the Indian peasants therefore could not have been the result of merely the fortuitous fertility of the lands they chose to cultivate. The details of the technology that made this productivity possible need to be studied carefully. Many 18th century western observers have often referred to the sophistication of the then Indian agricultural technology. The aspects which have been specially noted are the variety of seeds available to the Indian peasant, the sophistication and simplicity of his tools, and the extreme care and labour he expended in tending to his fields and crops.

According to recent historical findings, 41 different crops were being cultivated annually in the localities of the province of Agra. The number of crops cultivated in other areas of northern India was equally large.

For the south of India Alexander Walker (he was in Malabar and Gujarat from 1780-1810) notes that in Malabar alone upward of fifty kinds of rice were cultivated. This variety of seeds and crops that the Indian peasant possessed and his ability to vary these according to the needs of the soil and the season seems to set him apart from most other peasants or cultivators of the world whose knowledge was limited to far fewer crops.

A major component of these technologies was the way the land in each area was utilised. In the area of the 800 villages of Chingleput that we have talked about, an area equal to half of the total cultivated area was under water. The total cultivated area in these villages is about 54 thousand hectares. The area covered under various sources of irrigation amounted to 26 thousand hectares. Another 18 thousand hectares was under forest. This high proportion of greenery and water perhaps creates conditions where high productivity is easier achieved.

Increasing productivity of Indian agriculture is one of the major problems we have been trying to tackle since 1947. For this purpose we have extensively borrowed technologies from elsewhere. In a situation where we have been habitually and mechanically looking outwards for all new ideas in every



sphere of life nothing different could perhaps have been expected in the field of agriculture. But the technologies we have imported do not seem to be capable of solving the food problem of India. It is widely said that these technologies are proving ruinous for our land. It seems that we are actually consuming the fertility of our land in order to obtain productivity of the order of 5-6 tonnes a year on some of the best lands in India. Such technologies may have been appropriate for countries like the USA or the USSR or Australia, South Africa, etc., that have vast uninhabited tracts of land which could be consumed for immediate production and then left to nature to recuperate. But thought needs to be given whether such practices and technologies are right for India. India is a compact geographical entity. All areas of it are densely populated. We cannot possibly afford to follow technologies that ruin our cultivable land in thirty, forty or even in a hundred years.

We need, therefore, to seriously look at the way Indian peasants of about two hundred years ago managed to produce up to ten tons on a hectare of land without following the ruinous practices of today. We have so far introduced modern practices mostly in the irrigated areas of the country. The rainfed agriculture of India is still relatively untouched. Before we decide to devise newer policies for rainfed agriculture it is imperative to understand the Indian ways of practicing relatively high productivity agriculture in rainfed lands.

We shall have to work out several short-term and long-term strategies, not only in the mix of practices, technologies that gives us the agricultural production that we require but which the soil of India can continue to produce without doing irreversible damage to itself.

Dharampal

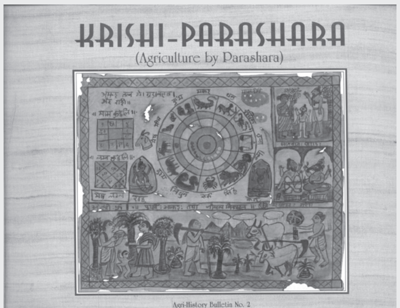
More Indian Agri-History

In the earlier edition of this *Sourcebook* we had discussed the Krishi Parashara and mentioned in passing that it was being translated into English by farmer groups in Karnataka. Though we tried to get a copy then, we were unsuccessful.

We were therefore delighted when we were able to purchase an English translation recently brought out by the Asian Agri-History Foundation. The translation has been accomplished by Nalini Sadhale.So finally all farmers in India can now access both the Sanskrit and English versions of this remarkable ancient text on Indian agriculture and benefit from the several 100 shlokas which are now competently translated.

The Krishi Parashara deals with several subjects including rainfall, the management of cattle, maintenance of agricultural implements, farming operations, harvesting and storage. As the Foundation has observed, the edition that is translated contains largely information relating to the cultivation of paddy. It is therefore assumed that several parts of the ancient book which deal with agriculture in other regions or other crops are still to be located.

Krishi Parashara



KRISHI-PARASHARA
(Agriculture by Parashara)

Agri-History Bulletin No. 2
Asian Agri-History Foundation

Asian Agri-History Foundation,
47 ICRISAT Colony – I, Brig. Sayeed Road,
Secunderabad 500 009.

Rs. 350 (1999) Pgs 94

In any case we are happy that the present edition is available and we thank the people at the Ancient Agri-History Foundation for this great work of theirs.

The Foundation itself believes that farmers in India have evolved some of the most sustainable agricultural management technologies suitable for different agro eco regions and therefore there is a great deal to be learnt from traditional wisdom and such indigenous time-tested technologies.

The Walker Report on agriculture in 18th century India

Alexander Walker wrote one of the most detailed descriptions of Indian agriculture in the 18th century. We are running extracts. The full document is to be found in Dharampal's Indian Science and Technology in the 18th Century, available from the Other India Bookstore as part of Dharampal's Collected Writings. (5 volume set Pp.1457 HB Rs.1700)

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In Malabar the knowledge of Husbandry seems as ancient as their History. It is the favourite employment of the inhabitants. It is endeared to them by their mode of life, and the property which they posses in the soil. It is a theme for their writers; it is a subject on which they delight to converse, and with which all ranks profess to be acquainted. They have provided a code of rules for good husbandry. A system is laid down for the proper cultivation of the soil.

I remember that almost 40 years ago an experiment was made in Salsette by delivering to the natives English ploughs and agricultural implements. Some active and enterprising Maratha husbandmen who had but few prejudices were procured: a village was built for them, they were furnished with seed and cattle. They entered on the trial of their own accord and choice. Having adopted the measure it was their interest that it should succeed, and there was no reason that I could ever discover that it failed through any negligence or misconduct of theirs. That it did fail however is certain, and as usual we imputed the failure to the prejudices, sloth and obstinacy of the natives. I firmly believe however that they judiciously rejected the whole of the cumbrous European machinery. They objected that the plough was too heavy: that the labourer and his oxen were needlessly fatigued: that it therefore performed less work, and that this was not better done for the purpose required than the work of their own plough. It was next observed that the plough was too costly, and similar objections were made to the greatest part of the European equipment.

We ought also to remember that India has very little occasion for the introduction of new plants for food. There are more kinds of grain cultivated perhaps, than in any other part of the world. She has also a vast variety of nutritive roots, and as a fruit, the plantain alone supplies her with the most nourishing diet.

It is the practice in many parts of India, to sow different species of seeds in the same field. This practice has been censured, but it is probably done for the same reason that our farmers sow rye-grass and clover with wheat, barley; or oats; tares with rye; beans and peas; vetches and corn, etc.

In India different kinds of seeds when sown in the same field are kept separate by the drill, or they are mixed together, and sown broadcast. In the last case they are commonly cut down as forage. A plant called sota gowar, is sown broadcast with sugar cane, in Gujarat. The gowar serves as a shelter to the sugar cane, from the violent heat of the sun, during the most scorching season of the year. Jowar and bajra are sown together, in the same country late, not for the sake of a crop, but for straw, which is very nutritive, and very abundant. This is one of the instances in which the natives provide a green crop for their cattle. Other grains are sown both together and separately, merely for their straw. Soondea, darrya jowar, rateeja and googra jowar are sown together: but with the exception, of googra jowar which is allowed to ripen, the rest are reaped while they are green.

It is evident that these examples are not founded on bad principles, and that they are in conformity with the best practice of farming. They evince the care of the Hindu husbandman to provide food for his labouring cattle. This is an object to which I have generally seen him attentive; but in many parts of India during the dry season it is extremely difficult, and often exceeds the impoverished means of the cultivator, to lay in a sufficient supply. He is sensible enough of the want, and does his utmost to scrape together, all the heterogeneous substances that are within his reach. In some parts of India, hay is not made, in other parts it is a regular crop, stacked and preserved. This is the case in Gujarat, and some other parganas. The hay is cut down not by the scythe but by the reaper's hook: It is dried and brought home in carts. The stacks are generally of an oblong shape something like our own, but often of much larger dimensions than any that I have seen in England. The stack is not thatched merely, but covered and protected, by a movable roof. In those parts of India where hay is not made and which are I believe unfavourable to this kind of crop, the cattle are fed with the roots of grass, very like our fiorin, with straw, and especially with the straw of jowar, all of which are considered to be very nourishing food. The roots of this grass are preferred by our own people in Karnataka to hay. Besides, the Hindu in many parts of India, prepares various crops of pulse, solely for the use of his domestic animals. In some places he feeds them with carrots.

It would require a volume to pursue all the details of Hindu husbandry. I shall however mention some other principal features. In many parts of India the fields are fenced and enclosed. This is the case wherever the people live in quiet and security. It is sufficient to show what was the ancient practice, when the Government was good and the country not exposed to the ravages of war. In Gujarat this attention to the security of property was seldom neglected. The enclosures are generally of a square form. The divisions are seldom very large, and are of unequal sizes according to the judgment, interest, or taste of the proprietor. They are remarkably neat, kept clean, and well dressed. These fields have frequently broad grassy margins which are left for pasture, such as are seen in some parts of Yorkshire. The whole world does not produce finer and more beautifully cultivated fields than those in Gujarat. In the neighbourhood of towns, they are commonly planted at the edge, with fruit, and other trees. This gives them the appearance of our hedge-rows, and they may be compared to the finest parts of England.

In every part however that I have visited the application of manure for recruiting and restoring land is well understood. The people seem to have all the resources that we have in this respect. By littering their cattle with straw, they increase the quantity of manure. They collect leaves, and putrescent substances. When they have no means of rotting the straw, they mix it with dry dung, old grass and even branches of trees, which they place in a heap and set fire to it. The ashes are then spread on the ground. The slime and bottoms of tanks are dug up, and considered to be a valuable manure.

The Indian farmer is again reproached for using his dung for fuel; but an explanation of the fact will in some measure vindicate him from this censure. The dung which is employed in this way (a small quantity after all) is obtained principally from what the animal lets fall on the high road, and which would otherwise be lost. Boys and girls are employed with baskets to gather it up from the roads and streets as in our own country. These children are seldom those of the cultivators, but of any of the inhabitants, most commonly of very poor people, who mix the fresh dung with charcoal or straw, make it into cakes, and dry them in the sun. The boys and girls may be seen in many parts of the North of England employed in the same way; and I have been told that in no very remote time a similar manufactory was carried on all over this country.

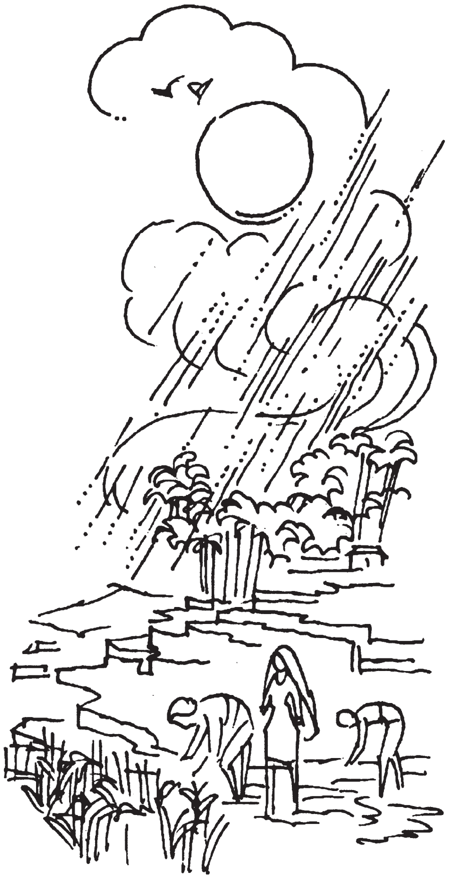
The practice of watering and irrigation is not peculiar to the husbandry of India, but it has probably been carried there to a greater extent, and more laborious ingenuity displayed in it than in any other country. The vast and numerous tanks, reservoirs, and artificial lakes as well as dams of solid masonry in rivers which they constructed for the purpose of fertilising their fields, show the extreme solicitude which they had to secure this object.

These works were not always executed at the expense of Government; they were often defrayed by the zeal of wealthy individuals, and sometimes by women. The names of these benefactors are still preserved; but they frequently serve only to commemorate a dry spot, and to point out where a tank had been. Perhaps no circumstance can more strongly show the decline of India than the decay of those works, which were at one time necessary to supply with food an abundant population. The bottoms of many of the tanks are now converted into rice fields, and the waters of others run waste. The dry bottoms still retain moisture, and as they are enriched with the alluvial deposits of a former age, they are eagerly seized by the husbandman, who is sure to be rewarded by an abundant crop. The ruin of these beneficent labours cannot but give to the traveller in passing, melancholy and unpleasant reflections.

I must repeat that I have seen in India the most abundant crops 'the corn standing as thick on the ground as the land could well bear it'; fields neat, clean and generally without a weed. Infinite pains are taken to extirpate these, and several ingenious instruments have been contrived for the purpose.

It is hardly possible that a weed can be found in a transplanted field, where every stalk is put in by the hand, and carefully planted.

There is cultivated in Malabar upwards of fifty kinds of rice. They are each distinguished by a separate name, by some peculiar quality, and different modes of cultivation are of course pursued. Some kinds grow on the hills and do not require irrigation. These are called Poonum and Modun. They are much longer in ripening than the usual cultivation. There is one species which is propagated by cuttings, a mode which I never heard of except in Malabar.



In Malabar the soil is classed in point of productiveness under three sorts. They form their judgement of its quality by the following experiments and process.

The first sort is called Pasheemah Koor. This is the highest quality of soil, and consists of rich clay. In order to discover its relative properties, they dig a pit about a yard deep, and as much wide. If the soil is of the kind in question, the hole will not receive, the earth that was dug out of it, when returned back, by a considerable quantity. The natives assure us that the hole cannot be made to contain the whole of the earth even by pressure, as by stamping with the foot, and beating it down with a spade or a piece of wood. This earth is very adhesive and unctuous. It sticks when handled to the fingers like grease; hence, its name, Pashee signifies paste or grease, and Koor, kind relatively considered.

The second is called Rashee Pasheemah Koor; ground of an equal or middling sort. To determine its quality, they dig a hole as before; but on returning the earth into the hole it will be exactly filled, and appear level with the rest of the field. This earth will also stick to the fingers, but not so adhesively as the first. It has therefore the epithet Rashee, which implies a mixture of earth and sand, which are united with the rich clay of the former soil.

The third kind of soil is simply called Rashee Koor, a term descriptive of its poverty. This is very poor light land. The earth in this experiment, when returned into the hole, will not fill the pit. This soil consists merely of loose sand.

It has been observed that although the Hindus live chiefly on vegetable diet, they cultivate few horticultural plants, and pay little attention to gardening. In this climate the whole country may be called a garden, and nature furnishes many things spontaneously which elsewhere can only be obtained by the most laborious exertions. Their abstemious habits are easily satisfied, and a small spot is sufficient to raise all the plants which they require: extensive scale.

Indian agriculture at the turn of the 19th century

The main source on which this essay is based is the *Report on the Improvement of Indian Agriculture*, by Dr John Augustus Voelcker, the Consulting Chemist to the Royal Agricultural Society of England who was deputed by the British Government to make enquiries on Indian agriculture. Voelcker toured the country extensively during his stay here from December 1889 to January 1891. He visited most of the provinces twice, once in winter and once during the rains. Also taking one district specially (the Kanpur district of present day Uttar Pradesh), he visited it repeatedly so as to follow systematically, in one locality, the progress of the various field crops at the different stages of their growth. His report was published in 1893.

Another important source is the book, *India in 1887*, by R. Wallace, another British agricultural scientist who also toured the country extensively, but in a non-official capacity, and recorded in detail his observations on our agriculture.

Apart from the above two sources, another is *A Text-Book on Indian Agriculture* in 3 volumes (published in 1901), by J. Mollison of the Bombay Agriculture Department, who later became the first Inspector General of Agriculture in India.

In his report Voelcker starts with the question: 'Whether the agriculture of India is capable of improvement?' And his answer:

'I must answer both "Yes" and "No". If, for instance I am taken to see the cultivation of parts of Gujarat (the then Bombay Presidency), Mahim in the Thana District of Bombay, the garden culture of Coimbatore in Madras, or that of Meerut in the North-West Provinces and of Gujarat and Hoshiarpur in the Punjab, I may be inclined to say, "No there is nothing or, at all events, very little that can be bettered here"; but if, instead, I visit parts of Behar, the Dacca District of Eastern Bengal, the Central Provinces generally, Khandesh in Bombay, the Tanjore District of Madras, the Cawnpore District of the North-West, or Hissar and Multan in the Punjab, it will not be long before I may be able to indicate a field for improvement. *I make bold to say that it is a much easier task to propose improvements in English agriculture than to make really valuable suggestions for that of India* (emphasis ours)...

On one point there can be no question, viz., that the ideas generally entertained in England, and often given expression to even in India, that Indian agriculture is, as a whole, primitive and backward, and that little has been done to try and remedy it, are altogether erroneous...the conviction has *forced itself upon me* (emphasis ours) that, taking everything together and more especially considering the conditions under which Indian crops are grown, they are wonderfully good. At his best the Indian *raiyat* or cultivator is quite as good as, and in some respects, the superior of the average British farmer, *while at his worst it can only be said that this state is brought about largely by an absence of facilities for improvement which is probably unequalled in any other country* (emphasis ours), and that the *raiyat* will struggle on patiently and uncomplainingly in the face of difficulties in a way that no one else would.

Nor need our British farmers be surprised at what I say, for it must be remembered that the natives of India were cultivators of wheat centuries before we in England were. It is not likely, therefore that their *practice* should be capable of improvement. *What does, however, prevent them from growing larger crops is the limited facilities to which they have access, such as the supply of water and manure* (emphasis ours). But, to take the ordinary acts of husbandry, nowhere would one find better instances of keeping land scrupulously clean from weeds, of ingenuity in device of water-raising appliances, of knowledge of soils and their capabilities, as well as of the exact time to sow and to reap, as one would in Indian agriculture, *and this not at its best alone, but at its ordinary level* (emphasis ours). It is wonderful, too, how much is known of rotation, the system of 'mixed crops', and of fallowing. Certain it is that I, at least, have never seen a more perfect picture of careful cultivation, combined with hard labour, perseverance, and fertility of resource, than I have seen at many of the halting places in my tour. Such are the gardens of Mahim, the fields of Nadiad (the centre of the 'garden' of Gujarat, in Bombay Presidency), and many others.

But to return to the question of improvement; while some have erred by calling the agriculture primitive, and, forgetting that novelty is not necessarily improvement, have thought that all that was needed was a better plough, a reaper, a threshing machine, or else artificial manures, to make the land yield as English soil does, others have equally erred by going to the opposite extreme, and have condemned all attempts at improvement, asserting that the *raiyat* knows his own business best, and that there is nothing to teach him.'

'*That differences of conditions and practice do exist, constitutes, in my opinion a ground of belief in the possibility of improvement, and it will be by the modification of these differences, and the transference of the indigenous methods from one part of the country to another, rather than by the introduction of Western practice, that progress will be made and agriculture be bettered* (emphasis ours).'

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Fertility of the soil (from Voelcker's summary):

'The important question is next dealt with—whether or not the soil of India is becoming exhausted under the present systems of cultivation. It is admitted that there is want of positive evidence in support of exhaustion, but instances are given from Settlement Reports and from the Famine Commission's Report, of a process of deterioration going on, and it is argued that *under existing conditions of export of grain, oilseeds, and manures, and the burning of cattle dung for fuel, there must be a gradual deterioration of the soil* (emphasis ours)...*an increased productiveness* of the soil is required, and that this can only be brought about by increasing the manure supply.'

The importance attached to manuring:

'There are numerous proverbs current among the people as to the necessity and value of manure but the practice is often not as good as the precept. Mr Benson gives, along with others, these from Kurnool:

"*Turva* (a kind of soil) hungers after manure as a Brahman after *ghi*"; "a field without manure is as useless as a cow without her calf" (meaning that she will not give milk unless the calf is before her).

Mr Nicholson quotes these:

"Old muck and lots of water"; "turn dry land into wet, pen your cattle (in the field), and feed straw to them"; "muck is better even than the plough". "If manure is useless (good) soil is useless"; or "manure is better than good soil"...

'The Indian cultivator shows by the money which he is willing to pay for manure when able to afford it, that he is by no means ignorant of its value. When he burns the cow dung which he collects, he does it, as a rule, rather from necessity than from want of knowledge of its worth...Nor is it in the quantity of manure alone that the Native often displays great foresight. He also often knows when to put it on, and for which crop to use it. He knows that he must not use it on "dry" land but on "wet" land, where it will decompose. He knows, too, the harm of using *fresh* dung, and that it will attract the white ants, and that they, in turn, will destroy the crop.'

The importance of cattle manure and the loss incurred in burning it as fuel:

'The most general manure, alike in India and in England, is cattle manure, or, as made in England, farmyard manure. But, whilst in the latter country *it has to be*, and can be, supplemented, and even in part replaced, by artificial manures, *this is not the case in India*, and cattle manure is the universal fertilizer and often the only one available (emphasis ours). When, therefore, we find it the general practice, even in villages, to burn a large proportion of the dung from cattle as fuel, and when, on nearing any town, we may see troops of women carrying in baskets on their heads, the cow dung cakes or *bratties*, which they have made into cakes and dried in the sun, we can not but pause to ask ourselves whether the burning of these cakes as fuel does not imply a great agricultural loss. Some have maintained that it does not, for they say that the ashes are saved and used on the fields, and assert that is practically the only thing of value in the dung; others hold that, even if the nitrogen be lost in burning, the cattle are so poor, and so poorly fed, that there is but little nitrogen to lose, for the dung is of very low quality, whilst even what is lost, is recovered in the extra amount of nitrogen which exists in the rainfall in India...

I do not mean to say that I have been able to investigate the question at all thoroughly, but I have done so sufficiently, at least, to satisfy myself of the incorrectness of many of the theories propounded, and to show that cattle manure in India is not the poor miserable stuff it has been represented to be, but that it must, and does, lose a very great deal if it is burnt for fuel, this loss not being recovered in the rainfall.'

What is forcing the cultivators to burn cattle manure?

'I have spoken of the practice of burning dung as being a general one, and so it unfortunately is; but it is very far from being a universal practice among cultivators...a great majority will not burn dung if they can help it. Perhaps in all my enquiries there was none into which I looked more closely than this, as I had heard and read such diverse opinions about it; consequently, wherever I went, I did my best to inform myself upon it. As a result I have no hesitation whatever in saying that amongst *cultivators* the reason why they burn dung is that they have no wood; and that if wood could be made cheap and accessible to them there would be an enormous increase in the amount of manure available for the soil. I can instance place after place which I have visited and where no cultivator burns a scrap of manure for fuel or where the least possible quantity is so used – generally only a little to boil milk. Coimbatore, Salem, Madura, Gujarat, Bombay Presidency, Nadiad, Hospet, Hoshiarpur, and Multan are cases in point. It is where, as in the Northwest Provinces, wood is dreadfully scarce, that the practice of burning dung has grown into a habit'.

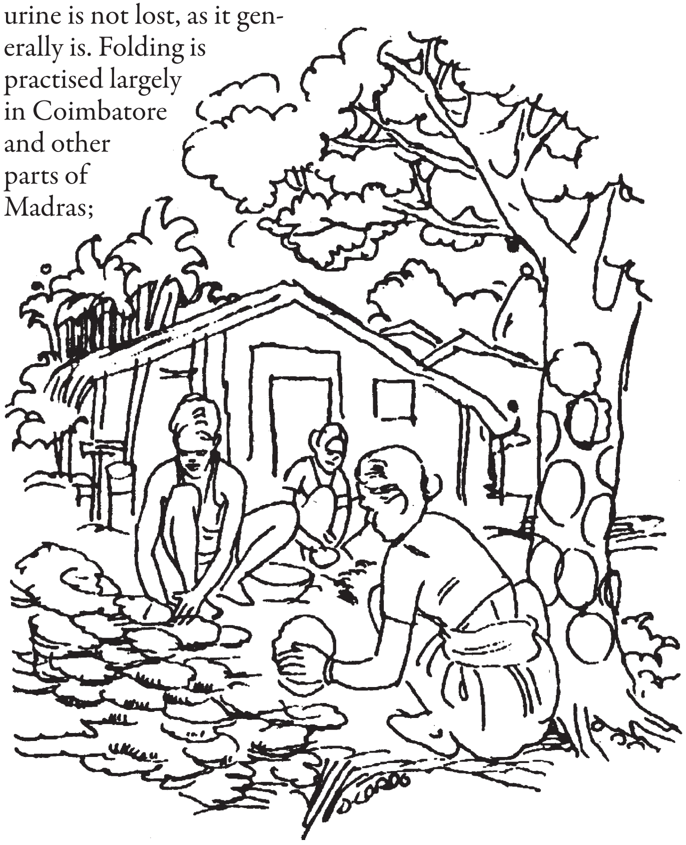
When are the ashes preferred to dung?

'Ashes of dung have a distinct value on account of their mineral constituents, and they may occasionally be used to greater advantage than the dung itself. When, for example, forcing effect is not desirable, the ashes are preferred;...

That the cultivator, when he does prefer ashes to dung, or else the whole dung to the mere ashes, does so simply from fancy or from ignorance, I am by no means ready to allow, but assert that quite the contrary is the case. A cultivator from Tirunelvelly, whom I interviewed, described to me his practice thus: "I would use ashes for my nursery beds, and raw 'dung' to get produce." He added that for heavy land he would use the raw dung, and the ashes for his lighter land. This use of dung for opening heavy land quite agrees with English experience.'

Sheep and cattle-folding:

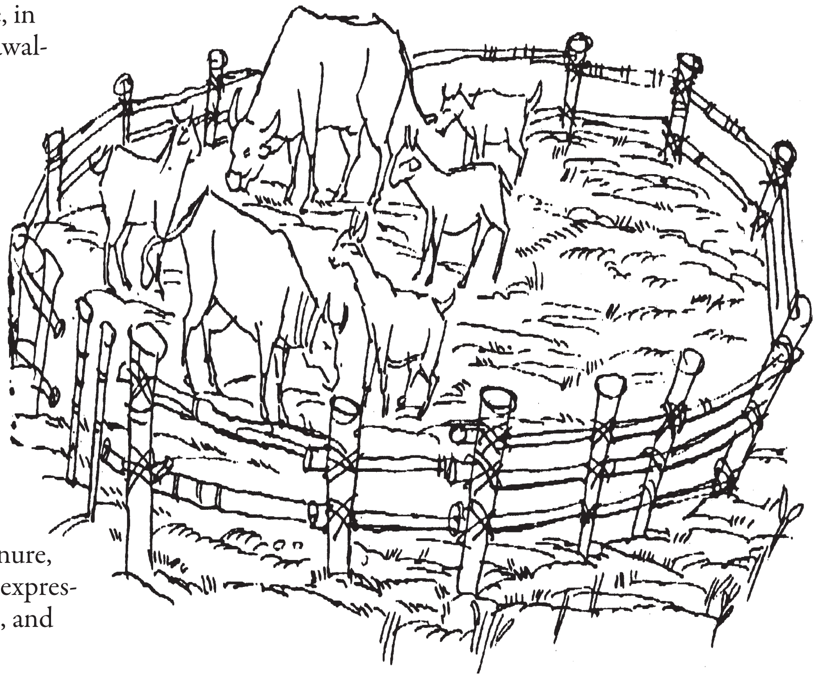
'Folding of sheep and cattle on land, for the purpose of manuring it, is another practice understood in some parts, but neglected in others. It has one great advantage in that the urine is not lost, as it generally is. Folding is practised largely in Coimbatore and other parts of Madras;



in the Northwest Provinces; in Palamau and Rungpore, in Bengal (chiefly for sugarcane and tobacco crops); at Rawalpindi (Punjab), and elsewhere.'

Oilseed refuse:

'Perhaps next to, but insignificant as compared with, cattle manure, is the use, as a manurial agent, of the refuse obtained from various oilseeds after the oil has been expressed from them. The principal oilseeds thus used are the following: Castor oil seed (*Ricinus communis*), Gingelly, *Til*, or Sesame (*Sesamum indicum*); Earthnut or groundnut (*Archis hypogea*); Kardai or Safflower (*Carthamus tictorious*); Rape seed; Mustard seed, Niger seed (*Guizotia abyssinica*); Linseed; Cotton seed. The seeds of the fruits of several trees, such as *Pongamia glabra, Bassia latifolia* the *Mahua* tree and *Melia Azadirachta* (the *Neem* tree) are also pressed, and the refuse is employed as manure, chiefly in the coffee districts. Most of these seeds, after expression of the oil, are also used primarily for feeding cattle, and secondarily for manure.'



The damage caused by the export of oilseeds:

'These (oil) seeds are for the greater part exported, (and) their export must imply the removal of a very considerable amount of the constituents of the soil. Were they (with the exception of the castor oil seed) to be consumed by cattle, after expression of the oil, the manurial constituents would be returned to the soil from which they were drawn, and the balance of fertility might be maintained. The oil, having itself no manurial properties, and being derived from the atmosphere and not from the soil is a fitting object for export; but to send away the entire seed, or the refuse after removal of the oil is to send away the valuable manurial constituents contained in the seed, including those taken out of the soil itself; in brief, to export them is to export the soil's fertility...

We in England are not slow to avail ourselves of the advantages this export system offers; and at the time of my leaving for India I was feeding bullocks at the Woburn Experimental Farm on linseed cake, and was also growing crops with rape cake manure. Both these materials, in all likelihood, were the produce of Indian soil, and represented its transported fertility.'

To get an idea of the amount of oilseeds exported from India, we may note that after the construction of the Suez Canal in 1869, the export of seeds increased from 2 million pounds to the staggering figure of 5 million pounds in a short period of 19 years.

The oil cake from the village '*ghani*' serves as a better manure.

Around the turn of the last century, hydraulic oil presses were getting established in Bombay. Apart from the export made in oilseeds, this introduction of mechanised oil presses in cities played a significant role in forcing the village ghani into oblivion. Mollison has given the following description of the village ghani and has also noted the greater suitability of the oil cake from the village ghani for manurial purposes.

'The country *ghani* consists essentially of a pestle and mortar; the pestle grinds the seed in the mortar. The cake is consolidated by the pestle into a thick layer against the sides of the mortar and is generally removed by a short crowbar. The oil sinks to the bottom of the mortar and is soaked up in a mop and collected in a vessel, the mop being squeezed by hand. The method varies; sometimes the oil flows from the mortar as it is expressed.

When oil cakes are used as manure they should be applied in the finest possible state of division. Generally in India the pounding is done with a stick. A cheaper and equally effective method is to crush the cake under the stone of any ordinary chunam mill. In this way a tonne can be crushed at a cost of Rs 2 to Rs 3. The powder got from country *ghani* cake in this way is much finer in consistence than that from hydraulic-pressed cake, and on this account the former probably acts the quickest and is the most effective as manure'.

Green-manuring

'Next to be considered is green manuring, a practice not unknown, but not as nearly as widely distributed as it might with advantage be...At Hospet, which is served by a canal, led by a weir or *anicut* from the river Tungabadra, and where the cultivation is exceptionally good, I saw this plan of green manuring being carried out. Trees are grown round every field and along the banks of the water channels, and are defoliated once in three years; the twigs and leaves are spread on the land where rice is to be sown; canal water is let on and the twigs are trodden into the soil with the foot.'

Rab cultivation

'Associated with the use of twigs, leaves, etc., for manure is the system of seed bed cultivation termed *rab*. This system is employed mainly in the Bombay Presidency throughout the districts of heaviest rainfall, but it is not unknown in parts of Bengal. The crops for which it is chiefly used are rice and a millet called 'nagli' (*Elusine Coracana*). The word *rab* literally means 'cultivation'. The process consists in heaping on the spot selected for the seed bed successive layers of cow dung, tree loppings, shrubs, leaves, and grass, with earth on the top to keep all down; the heap is made about three feet high, and then the whole is set fire to.

As regards the advantage, still more the necessity of *rab,* there have been continuous contentions between the cultivators and those who have supported them, on the one hand, and the Forest Department on the other, the latter maintaining that the practice is a wasteful one, and that the lopping of trees injures the forest greatly.

In 1885, a Forest Commission was appointed in Bombay to enquire into the matter, and Mr. Ozanne, Director of Land Records and Agriculture, Bombay Presidency, conducted a number of experiments, which though not absolutely conclusive nor complete, went far to show that the *raiyat* in *rab* areas was adopting the only ready means by which he could cultivate his rice crop with profit.'

Use of silt:

'Vast areas in Bengal are annually renewed naturally by the silt of rivers, and there are in Punjab, for example, near Gujarat, stretches which are covered yearly by the silt brought down by mountain streams. In the Jhelum and Shahpur districts, at the foot of the Salt Range, there are similar tracts; here the fields are first embanked and then the flood water of hill torrents is turned into them through an opening in the upper end of the embankment. The water is allowed to flow in until the field is converted into a pond. When this dries up, a crop is sown, and requires no further watering or rain. In this way the wheat growing areas of these districts are farmed and no manure is used or needed, the coming of the silt supplying more fertilizing matter than many manurings could.

It is found that wherever there is silt the *raiyat* does not value ordinary manure or take trouble in preserving it; he looks for the silt to come instead...Great distinctions are drawn by the cultivators between the rivers and canals which bring silt and those which do not.'

Soil-mixing

'The rich soil dug out from tanks is widely appreciated, throughout Madras, and in Coimbatore I have seen "soil-mixing" going on, a lighter and red soil being mixed with a heavier and black one. At Rungpore, in Bengal, this is also practised especially for jute land, the better soil being mixed with the inferior, just as pond mud might be mixed with a sandy soil.'

Mollison gives the following account of soil-mixing:

'Mixing is not unknown in India. Clay is often carted from rice fields in sufficient quantity to add a layer one to two inches thick on sand land. The addition changes the consistence of the sand, so that it becomes better suited for sugarcane and other garden crops raised under irrigation. The cultivator appreciates the value of tank mud and in those districts where these water reservoirs are common they are cleaned out with the utmost care and regularity each year. The silt which has collected in these tanks being the washings of village sites and cultivated fields, has some manurial value, and applied as it is at the rate of 40 cart loads or more per acre, adds considerably to the body of the soil. It takes 134 cubic yards of earth to cover an acre one inch thick.'

The issue of export of bones:

'Bones, as is known, are very extensively exported from India, and are but little used in the country itself. The question whether the export of bones should be allowed to continue without a strong effort being made to retain this source of manure in the country, has been prominently brought forward of late years, and the Government of India recently caused enquiries to be made as to the trade in and use of bones. The general reply received was that the export was an increasing one; that the trade was carried on entirely by European capital, and that the actual collection of bones was done by Muhammadans and low caste Hindus; *that it was principally confined to districts served by railways, and from villages within an*

Agricultural Reform in India

A.O. Hume (1878, p.4-5) makes the following observations about Indian knowledge about soils:

'Nothing, indeed, is more perplexing than the enormous number of names applied by native agriculturists to soils, the more so that probably almost every district rejoices in at least a dozen purely local names which are unknown elsewhere.

There is no real confusion, however. Native cultivators as keenly appreciate the smallest differences in the relative qualities of different soils as do the best European farmers, but the fact is that independent of names indicative of the quality of the soil (and often to the entire exclusion of these) they make use, in describing their land, of names having reference to external conditions, the frequency or recency of cultivation therein, its situation as regards inhabited sites, etc., its position as upland or recently-formed alluvium, its occupation for pasture, fields, or gardens, its external features etc. Nothing is more common than to hear soils referred to as such, by names which really only indicate features or circumstances altogether external to the soil itself and independent of its intrinsic quality. This is no doubt inaccurate, but it is very natural since the value to the agriculturist of any land will often depend far more on these external circumstances than on the inherent quality of the soil, which latter, moreover, will, as time goes on, be often greatly modified by the former, as where "bhoor" or light sandy soil, becomes in course of time, by proximity to a village, constant cultivation and manuring, a kind of "do mut" between garden mould and rich loam.'

Table 1: Export of bones

Year	Tonnes
1884-85	18,000
1885-86	22,000
1886-87	18,000
1887-88	26,000
1888-89	35,000
1889-90	44,000

easy distance of the line (emphasis ours); and, lastly, that bones were not used by the native agriculturists...

Within the past fifteen years a large trade has sprung up in the collection and export of the bones; it has increased and is still increasing. Almost the whole amount collected is sent to the United Kingdom, where the use of bones, either raw or else manufactured into artificial manures, is valued highly.

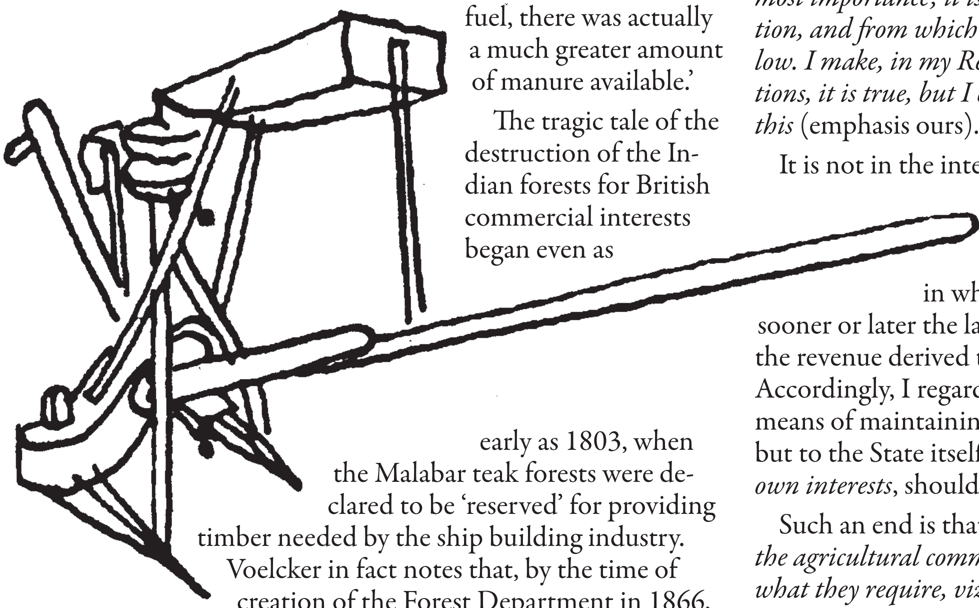
The exports of bones from India have been, in round numbers, as shown in table 1 above.

Artificial manures:

Voelcker states that the subject 'of imported manures, which in an account of English agriculture would fill a most important place, may, so far as India is concerned, be very summarily dismissed.'

* * *

A.O. Hume writes in 1879, '*Only 50 years ago* (emphasis ours), when jungles and grazing grounds abounded, when cattle were more numerous, when much wood was available as fuel, there was actually a much greater amount of manure available.'



The tragic tale of the destruction of the Indian forests for British commercial interests began even as early as 1803, when the Malabar teak forests were declared to be 'reserved' for providing timber needed by the ship building industry. Voelcker in fact notes that, by the time of creation of the Forest Department in 1866, considerable damage had been done. However, the crucial fact was that, under the aegis of this Department, the same activities were continued with the only difference that *the local agriculturalists were now completely deprived of any use of the forest resources*.

The anti-agricultural policy of the Forest Department:

'When it (i.e., the Forest Department) began its work its chief duties were the preservation and development of large timber forests, such as the teak forests of Lower Burma, the *sal* forests of Oudh, and the *deodar* forests of the Himalayas, or the forests of the Western Ghats. Its objects were in no sense agricultural, and its success was gauged mainly by fiscal considerations; the Department was to be a revenue-paying one. Indeed, we may go so far as to say that its interests were *opposed* to agriculture and its intent was rather to *exclude* agriculture than to admit it to participation in the benefits...

The requirements of the agriculturist in respect of wood are, small timber for house building, wood for making implements, and firewood; the last named principally to take the place of the cow dung which, though the most valuable manure at the *raiyats'* disposal, is, nevertheless, generally burnt as fuel in default of wood...

I do not take to myself credit for more than emphasising what others have already pointed out on this subject. As much as 17 years ago, Mr. R.H. Elliot, writing in the "*Times*", urged the necessity of "Fuel Reserves" for India, and much that he then said has since proved to be true. The same views have been urged by others, but there is call now for more definite action than there has been in the past. What has been done so far, whilst not without benefit to agriculture, has, to my mind, *taken mainly the form of supplying wood for the requirements of large towns and railways* (emphasis ours)...

It is, in short, impossible to have timber forests and agriculture on the same area...'

'*The supply of wood to serve as fuel forms one of the most important factors in maintaining the fertility of the soil, or, in other words, the prosperity of agriculture. I can hardly put this too strongly, for it is the one practical measure on which I place the most importance; it is that which calls for the most urgent attention, and from which the greatest benefits may be expected to follow. I make, in my Report, other recommendations and suggestions, it is true, but I consider them minor ones compared with this* (emphasis ours)...

It is not in the interests of the people alone that I would urge this, for, having fully discussed all other ways of increasing the manure supply, it is clear that this is *the one way* in which it can be effected, and, if not effected, sooner or later the land must fall off in productive power, and the revenue derived therefrom by the State must decline too. Accordingly, I regard the provision of fuel as the most potent means of maintaining prosperity, not alone to the cultivators, but to the State itself, and as a measure which the latter, *in its own interests*, should take up immediately.

Such an end is that which I have indicated, the *provision, for the agricultural community primarily, of facilities for obtaining what they require, viz., small timber, wood for implements, firewood, leaves, grass, or, where possible, grazing* (emphasis ours). No action would, I am sure, do more to render the Forest Department popular and its work one of wide spreading benefit, could it be instructed to carry out such objects as the above, and to bring these facilities to the cultivators' doors. Such a policy would be one of *giving*, and not what the people have considered the past policy, one of *taking away*. The cultivators would then feel that the forests were a real benefit to them, and possibly much uncultivable land would become clothed with trees and grass.'

* * *

Since this was a subject of great and repeated controversy in the last century, we shall quote both from Voelcker's report and the book of Wallace. Firstly, Wallace's observations are the following:

'Many attempts have been made to introduce into India European ploughs which turn down the surface soil, and which replace it with fresh soil from beneath. With few exceptions, in rare and unusual circumstances, those attempts have failed.

The refusal of the ryot to adopt the new form of implement has been set down to "ignorant prejudice"; but after a careful and minute investigation of the facts and circumstances, I have come to the unqualified conclusion, that the extensive adoption of English forms of ploughs would be ruinous, and, in general, would probably reduce the crops so as to plunge the whole country into famine. If the land were turned up to the action of the sun in the wet condition in which it is now worked, or rather stirred, by native implements, it would in a few hours of hot sun bake into the condition of air-dried bricks, which it would be almost impossible to reduce. Alternate wetting and drying would accomplish it in time; but once thoroughly hard, such soil is not easily wetted, unless it is soaked or submerged in water. Rain falling upon it penetrates but a short distance. If once it assumes the baked condition it is practically impossible in the short preparation time of one season to bring it back to a state fit to grow crops. In addition to this, the land is left open to dry to a greater depth during the scorching heat of summer.'

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Even if properly used, a plough that goes deep may do harm where a native one would not, viz., by turning up inferior soil, and by bringing lumps of limestone (*Kankar*) to the surface.

Again, it is quite possible that, were deeper ploughing to be in vogue, moisture, which in the case of some soils, it is so necessary to retain, might be lost. The turning over of a furrow is not always an advantage in India; if the soil be at all stiff, the sun will rapidly bake the slice turned over; it will remain more like a brick than like soil, and will not readily pulverise again. This would not occur with the native plough, the action of which is more like that of a pointed stick running through the ground, just below the surface, 2½ to 3 inches deep, simply stirring and loosening it. For hard and sun baked ground, such as is often met with, no action could be better adapted, and, in a trial at Meerut, I saw an English plough completely fail on such land.'

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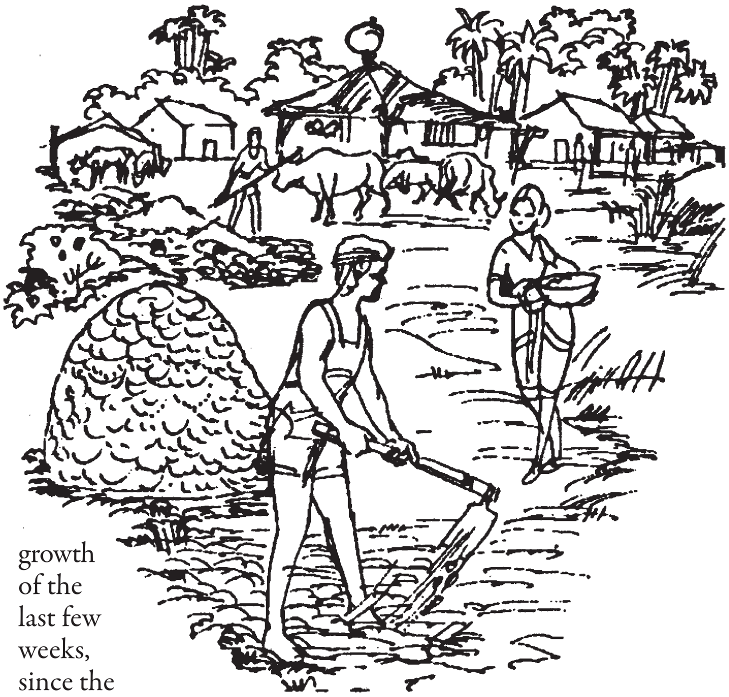
The general excellence of cultivation:

'I have remarked in earlier chapters upon the general excellence of the cultivation; the crops grown are numerous and varied, much more indeed than in England. That the cultivation should often be magnificent is not to be wondered at when it is remembered that many of the crops have been known to the *raiyats* for several centuries; rice is a prominent instance in point.'

A.O. Hume had the following to say on the way the fields were maintained in India in his 'Agricultural Reform in India' (1879, p.5):

'As for weeds, their wheat fields would, in this respect, shame ninety-nine hundredths of those in Europe. You may stand on some high old barrow-like village site in Upper India, and look down on all sides on one wide sea of waving wheat broken only by dark green islands of mango groves – many square miles of wheat and not a weed or blade of grass above six inches in height to be found amongst it. What is to be spied out creeping here and there on the ground is only the growth of the last few weeks, since the corn grew too high and thick to permit the women and children to continue weeding.'



Wallace states the following on the abilities of Indian cultivators as contrasted to those in England:

'The natives of India have great powers of observation for ordinary everyday objects. They possess a very extensive acquaintance with all common plants and animals. An ordinary ryot will recognise and name nearly every plant that can be picked up on his land, and with a characteristic sway of his head will indicate whether it is valuable or otherwise. The total ignorance of a country man at home, in all matters of details relating to the minor facts of Nature, stands out in striking contrast to the intimate knowledge of, and interest shown by natives in everything which immediately surrounds the human species in India. In mentally answering to myself the great and important question, is the labouring population of India, when free from the ravages and horrors of famine, contented and happy? – I could not help contrasting the results of our modern European civilisation with the guileless plan so well exhibited in India, by which Nature occupies and develops the minds of her votaries, in a light which was decidedly favourable to her methods of working.'

Rotation of crops and mixed cropping:

Wallace observes that:

'It is quite a mistake to suppose that the native cultivators of India are unacquainted with systems of rotation of crops. It is a fact that an extraordinary variety of rotations is practised in India. There, systems are much more varied and numerous than in England.'

Voelcker has given the following detailed descriptions of the practice of rotation and on the cultivation of mixed crops:

'It is quite a mistake to suppose that rotation is not understood or appreciated in India. The contrary is the case. Frequently more than one crop at a time may be seen occupying the same ground, but one is very apt to forget that this is really an instance of rotation being followed. It is not an infrequent practice, when drilling a cereal crop, such as *jowar* (*Sorghum vulgare*) or some other millet, to put in at intervals a few drills of some leguminous crop, such as *arhar* (*Cajanus indicus*)...

There are many systems in ordinary use which are far more complicated than the above. For instance, not only may there be rows of crops side by side as noticed above, but the alternating rows may themselves be made up of mixtures of different crops, some of them quick-growing and reaped early, others of slower growth and requiring both sun and air, and thus being reaped after the former have been cleared off. Again, some are deep-rooted plants, others are surface feeders, some require the shelter of other plants and some will thrive alone. The whole system appears to be one designed to cover the land, and thereby to prevent the bareness and consequent loss to the soil which would result from the sun beating down upon it, and from the loss of moisture which it would incur. It is known also that the process of nitrification in soils is much more active when a growing crop is on the ground than when the latter lies fallow...

◆

'Although it was not till 1880 after a protracted controversy lasting thirty years that Western science finally accepted as proved the important part played by pulse crops in enriching the soil, centuries of experience had taught the peasants of the East, the same lesson. The leguminous crop in the rotation is everywhere one of the old fixed practices in some areas such as the Indo-Gangetic plain; one of the pulses – the pigeon pea – is used as a sub-soil cultivator. The deep spreading root system is used to promote aeration of the closely packed silt soil.'

The successful practice of growing mixed crops in India points to the fact that the practical experience of the uneducated Indian *raiyat* has determined centuries since, a means of providing an inexhaustible supply of nitrogen for the soil, while enlightened European agricultural chemists have only recently begun to see the way. It is a common saying in England, "Wheat after beans or clover"; the Indian *raiyat* has similar though not identical experience; he knows that a leguminous green manure crop is a very good preparation for sugar cane (*Saccharum officinarum*), that gram (*Cicer arietinum*) or groundnut (*Arachis hypogia*) are each uncommonly good rotation crops with cereals, that *tur* (*Cajanus indicus*) a deep rooted pulse had a decidedly ameliorating effect upon the soil fertility and that a second crop of *val* (*Dolichos lablab*) taken on rice (*Oryza sativa*) land in seasons when the land holds sufficient moisture after the cereal is harvested, enriches the soil for the rich crop of the following year...

A rotation in which gram or groundnut takes a prominent place will to some extent ensure that the land under ordinary tillage will remain tolerably clean. The successful cultivation of some crops demands that the soil be kept absolutely clean. One need not look for a good crop of potatoes (*Solanum tuberosum*) or onions (*Allium cepa*) or of tumeric (*Curcuma longa*) or ginger (*Zingiber officinale*), of chillies (*Capsicum frutescens*) or sugar-cane unless the soil is well stocked with manure and is absolutely clean. The tillage of these and other garden crops is only undertaken by well-to-do cultivators and indicates a due appreciation of systematic rotation and an advanced system of husbandry...

In the Bombay Presidency irrigated garden crops are systematically rotated. Less attention is paid to the rotation of purely dry crops. The reason is that everywhere on dry crop land the practice of mixed cropping prevails and the practice obviates to some extent the necessity of other rotation.

Fallowing

The following extract is again from the book of Mollison:

'The principle of bare fallowing demands that the soil be rested and at the same time be thoroughly cultivated. The practice is not unknown in the Bombay Presidency. In some *talukas* of the Branch Collectorate on black cotton soil it is systematically practised. The fields so treated are known as *vashil* fields. Fallowing is only practised on the more extensive holdings. The occupants can afford to allow a certain proportion of their lands to be fallowed every year. Excellent crops of cotton are got after a year's fallow without any manure. Where fallowing is systematically practised the holdings are thoroughly clean...

In the poor uplands of the Konkan and elsewhere in the Bombay Presidency where the soil becomes worn out by a succession of crops and there is no practical present means of making it recover its fertility, sometimes it is allowed to lie waste for years. When a certain number of years have elapsed it is again brought under cultivation. The land so treated although not fallowed in the true sense of the term recovers fertility. The practice is confined to districts where the rainfall is heavy. Ordinary fallowing would do more harm than good there, because a heavy fall of rain would wash the loosened soil from the sloping ground to the lower levels. Whilst the land is lying waste the spontaneous growth of grass and scrub jungle not only prevents erosion of existing soil, but conserves from waste any soluble matter dissolved from the soils' mineral store. Vegetation existing on the surface feeds on the soluble matter in the soil and prevents a serious loss which drainage would undoubtedly otherwise cause. Before these lands are again brought under tillage, the scrub growth is cut, laid evenly over the surface and burnt, and although the practice may be described as a wasteful one, the soil is undoubtedly enriched by the ashes, whilst on account of the rest it has otherwise recovered sufficient fertility to produce a short rotation of crops consisting chiefly of the poorer hill millets.'

Selection of Seeds

It was Voelcker's view that the Indian cultivators did not follow the practice of selection of seeds as meticulously as the European cultivators:

'In this respect the Indian Cultivator might well follow the European planter, as, for example, in the careful selection of indigo seed.'

However, Voelcker also notes that the Indian cultivators were knowledgeable about the selection of seeds:

'There are several proverbs, such as one which Mr Benson found current in Kurnool, pointing to the desirability of selecting seed. "As you give gifts to the deserving, so select seeds

Farmers of India

Farmers of India (Four Volumes)
By M.S. Randhawa and others.
Indian Council of Agricultural Research

Much before the green revolution contaminated their brains, agricultural scientists and even the agriculture ministry had a far greater respect for the farming communities spread out all over the country and for their skills than they do today when they seem to have opted for promoting corporate agriculture.

The Indian Council of Agricultural Research organised a comprehensive study of farming communities, their life-styles and agricultural practices, and produced the information in a set of four volumes called *Farmers of India*. I do not know whether these volumes are any longer available on sale, but they will most certainly be accessible through public libraries.

The four volumes deal with farming communities in every state and community of the Indian Union. The first volume covers the states of Punjab, Himachal Pradesh and Jammu and Kashmir and was published way back in 1959. The second volume followed two years later and covered Madras, Andhra, Mysore and Kerala. The third volume (1964) was devoted to farming communities of Assam, Orissa, West Bengal, Andaman and Nicobar. The fourth and final volume appeared in 1968 and covered Madhya Pradesh, Rajasthan, Gujarat and Maharashtra.

The book is written by M.S. Randhawa and his associates. Since the text is written by scientists who accepted without question opinions they received from their colonial teachers, certain of the opinions purveyed should be taken with a pinch of salt (iodised or whatever). For example, an uncritical account of jhuming in volume four only conveys negative impressions and even gives wrong information. One has only to read anthropological texts like Evelyn Hong's ***Natives of Sarawak*** (featured in this Source Book in chap.5) to access a detailed, elaborate, scientific defence of jhuming or swidden agriculture as it is also called.

— C.A.

* * *

The farmer in Maharashtra is well aware of the necessity of manuring the land and as far as possible he prepares and conserves farmyard manure. About 40 to 50 years ago it was the general practice not to allow farmyard manure to be taken away or sold from a village. The whole village would obstruct any attempt to remove manure from a village for use in another village.

* * *

The land says to the farmer: 'If you want to remain debt-ridden, sow cotton in the same plot year after year; but if you wish to be debt-free, sow sesamum after gram.'

* * *

Labour can go waste, but never manure.

---

for your soil", runs the proverb, but the practice is different to the precept, and seed is not habitually selected.

Now and again selection of seed is practised to a certain extent. Thus in the Rawalpindi Settlement Report, Mr F.A. Robertson points out that the Arains or Malliars are the best cultivators and that they select their maize seed.'

The perspicuity of the Indian farmer in differentiating different kinds of seeds and crops has been noted by several authorities. For example, John Kenny in his book, 'Intensive Farming in India' (1912, p.iii) states:

'To preach dry farming to men to whom it was a hoary tradition when Englishmen used paint instead of clothing did not appear to me the surest way to gain the confidence of the Kunbi (Indian farmer), nor did I consider it wise to suggest seed selection in a land where 4,000 different sorts of paddy are grown in one province alone, and carefully differentiated according to their qualities and the land suitable for them.'

On the excellence of 'garden' cultivation:

'I may fairly say that nothing in the agriculture of India impressed me so much as the excellence of the cultivation carried on by irrigation from wells ("garden" land). This was not in the case of one or two parts only, but in almost every instance where this system of cultivation was adopted.

Whether it be in the *betel* and plantain gardens of Mahim (Bombay), the market-gardening of Meerut (Northwest Provinces), the "garden" land of Coimbatore, in Madras, or that of Gujarat and Hoshiarpur in the Punjab, the finest cultivation I have seen has almost invariably been that carried on by well irrigation. Here it is that the greatest care is given, and the greatest economy used; it is for this land that manure is most saved, and from it every weed is plucked away as an intruder; here every inch is utilised for growing crops – not one crop alone, but often three or four together – and to these crops the precious water is dealt out, as it were, by measure. To take a single instance – at Mahim, the *betel* plant is watered every sixth day until manure is applied to it, and after that every third day until rains come; sugar-cane once every six days until the rains; plantains similarly, and ginger at intervals of three days only. The explanation of this excellence of cultivation as carried on by irrigation from wells is found chiefly in the fact that every drop of water has to be raised by the *raiyat's* labour and that of his bullocks, and that the well itself has often been built with his own money and by his own hands. But I must not dwell on this, except to say in regard to this cultivation that I can suggest nothing in it to improve; indeed, the people have mastered thoroughly all details of the system. English farmers may well join with me and look on in admiration, and it should be the aim of every one interested in agricultural improvement in India to extend this method of irrigation in every way possible."

A similar opinion is expressed by Mollison:

'Where there exist, and when well or canal irrigation is available garden cultivation is started by well-to-do cultivators. The garden lands near to Surat are very fertile and the methods of cultivation can hardly be excelled. The crops grows follow each other in rapid succession; ordinarily the land is double cropped each year.'

* * *

According to Voelcher: 'The increasing demands of other countries for wheat, oilseeds, cotton, etc., have exercised an important influence upon the systems of Indian agriculture, *and whereas the raiyat formerly looked to his field yielding him a crop which would provide grain to himself and his family as well as straw for his cattle, the element of export has now entered into calculations and has marked changes in the kinds and extent of the crops grown* (emphasis ours).'

The story of the Saidapet Farm:

'The earliest of all the Experimental Farms was Saidapet, established in 1865. It is also the one on which the greatest attempts have been made to introduce new practices and new implements to the notice of the Indian cultivator. The past expenditure on the Farm has been considerable, and it has now been finally abandoned as an Experimental Station. From 1871 to 1887 it was under the direction of Mr W.R. Robertson, and was supplemented in 1876 by the starting of an Agricultural College. It is not for me here to go into the past history of the Farm, nor to discuss at length the steps which have led to its abandonment. It is enough to say, in the words of the Directors of the Madras Agricultural Departments, "The results attained at the farm are, so far as the agriculture of the country is concerned, purely negative; no attempt is made to connect the one with the other". Undoubtedly this failure to bring itself into sufficiently close communication with the native agriculturists has had much to do with the result...I have already thoroughly endorsed the recommendations of the Committee (The Madras Agricultural Committee, 1890) as to the *necessity of abandoning the attempts to teach the raiyat until more is known, through careful enquiry, of what his practices really are, and the conditions under which he pursues them* (emphasis ours)'.

The nature of the agricultural education:

'(The Poona College of Science) in the agricultural branch, is virtually the Agricultural College of the Bombay Presidency... In looking over the syllabus in agriculture, it is clear to me that it has been drawn on an English and not on an Indian model. Thus, practices such as "warping of land" are mentioned; manures such as sulphate of ammonia, dried blood, soot, and artificial manures, none of which have any place in Indian agriculture, are introduced; the requirements of "fattening animals" are supposed to be learnt, and this is a country where no fattening of animals whatever is carried on. On the other hand, many subjects which have a special interest in Indian agriculture are omitted, such as canal and well irrigation, *Kankar*, oil cake refuse, *ghi*, etc.'

'The student at an Agricultural College will rather take a Government appointment worth Rs 50 a month than devote himself to the management of his farm, or superintend that of some one else. There is a general impression that everything pays better and is more dignified than farming.'

PPST Editors

(First published in the *PPST Bulletin*, November 1982). The essay – extracts only – provides a first rate introduction to Indian indigenous agriculture before the British colonial power demolished its principal elements with a few deft strokes. — C.A.)

Indigenous knowledge of the life of plants

The second book from the Asian Agri-History Foundation deals with the translation of another ancient text dealing with plant science and plant life. Both the Sanskrit and Indian editions are made available in the book.

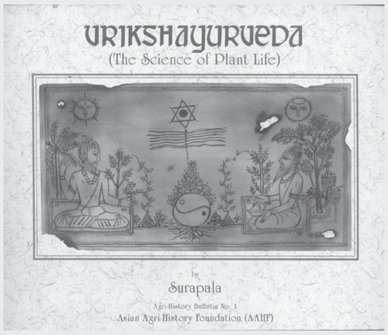
The present text deals with several matters including nutrients, type of soil, trees, method of planting, diseases of plant and treatment and ground water.

There are several commentaries attached to the translation where scholars discuss the findings including a plant index.

This is an important text for those who are interested in the history of botany and agriculture in India particularly for those who seek information which is completely outside the context of western knowledge.

Vrikshayurveda: (The Science of Plant Life)

By Surapala



VRIKSHAYURVEDA
(The Science of Plant Life)
by
Surapala
Agri-History Bulletin No. 1
Asian Agri-History Foundation (AAHF)

Pp. 256. (PB) / Price Rs. 200/-

What is the use of several trees grown in the forest or sons who do not serve the purpose of dharma or artha? (Instead), a single tree by the wayside is far better whereunder people can rest.

Ten wells are equal to one pond. Ten ponds are equal to one lake. Ten lakes are equal to one son. Ten sons are equal to one tree.

And if one plants a pleasure garden abounding in boundless fruits (yielding many rewards), (then) gods, wise men, nymphs, yakshas, etc., reside there for three ages.

Knowing this truth one should undertake planting of trees since trees yield the means of attaining dharma, artha, kama and moksha (the four aims of life).

The Sustainable Agriculture of the Warlis

It is now an accepted fact among knowledgeable persons that the people who live in forests – tribals, adivasis, vanvasis – harvest more output per energy input invested than any other group or class of food-growers or producers.

The late Winin Pereira celebrated the sustainable life-style of the Warlis, a group of tribal communities approximately 70 kms from the metropolis of Mumbai.

— C.A.

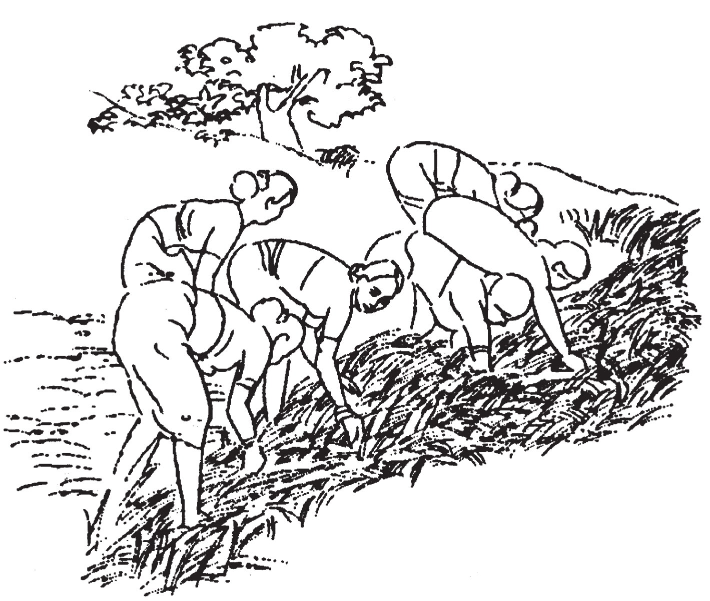
◆

Crops

Their agricultural system is almost always called primitive. It is in fact sophisticated. It has been developing over several millennia by a close study of the interactions between plants, animals and human beings. If it has survived for so long, it can only be because it is ecologically sound. The practice of traditional agriculture does not mean rigidity in techniques; rather, it is a way of thinking which maintains a dynamic equilibrium and which can be adapted as changing circumstances require.

Their priority is to grow enough paddy and pulses for their own consumption, but they grow oilseed and fibre plants as well as vegetables in an attempt to be self-sufficient. They have evolved a complex method of multiple cropping which appears unique. Dependent as it is on a short, irregular, rainy season, it maximises food security, makes optimum use of the available resources of land, labour and animal power.

Warlis usually cultivate a few more than 15 major traditional varieties of paddy that are available to them. These have different requirements of water and soil, mature at staggered times, have different susceptibility to pests, and possess varied flavours. If the monsoon proceeds normally, their main varieties give a good yield; if it doesn't, the others, more hardy but with lower yields still produce some food. While their varieties may not give a higher maximum yield than a new High Input Variety (HIVs, also called High Yielding Varieties) would give in a year with good rain, HIVs yield little or nothing in an even slightly abnormal year. The average yields over a number of years could, therefore, be higher with their traditional varieties.



Some varieties grow on land that is bad, hilly or that has lime in it. One black variety is harvested within 45 days of sowing. Most paddy varieties require to be stored for some time before use but this one can be consumed immediately, thus giving them food soon after the start of the rains. Such varieties may be essential for all of us if the monsoon becomes more erratic because of global warming.

Warlis have experimented with HIVs, which they claim impoverish the soil. So, if they plant HIVs at all, they rotate them with traditional varieties which, they say, restores soil fertility. This shows that Warlis are still carrying on field research with long term planning in mind.

They follow the same system of transplanting as other farmers in the Konkan region. Manuring (in a process called rab) is carried out using leaves and twigs from their jungles, a small area of which can provide sustainable yields, since the trees are never destroyed and their jungle does not have to start from scratch every cycle. Further they claim that they lop branches only from trees whose boles will be improved by lopping. In addition, paddy straw that was used in the previous year's thatch and twigs from old fences are also recycled. All these are burnt, together with some cowdung on the seedling fields. The manure used for the main-crop fields is also organic.

Warlis say that if they use synthetic fertilizers they will get a good crop in the first year of use, but that in subsequent years the yield will go down, and they will need increasing quantities every year. We know now that this happens because the synthetic nitrogen lowers the output of nitrogen-fixing plants. The replacement of organic matter by synthetic fertilizers also reduces the ability of the soil to hold water and, as they say, 'the soil gets dry.' This makes the crop more susceptible to erratic monsoons as well as to erosion by wind and water. So, even though synthetic fertilizers are provided to them by the government free or subsidised, they do not use them, or use them only for a year or two and then switch back to organic manures. Curiously, Adivasis in other areas cultivate in the same manner. On the other hand, numerous 'educated' sugar cane farmers in Nasik district have continued to use such fertilizers until nothing at all can grow on their soil. They then find it difficult to revert to traditional practices.

Some Warlis plant dhedhar, a species of *sesbania*, as a green manure crop in the main fields just after the first rains fall. This is ploughed in after about three weeks, when the field is puddled immediately before transplanting. The seeds are obtained from wild plants or those growing in hedges. A similar species, *Sesbania rostrata*, has very recently been tested out by the International Rice Research Institute in the Philippines, and is being used in a similar manner, but with irrigation. The Warlis had discovered this technique years earlier.

Warlis integrate paddy with a number of other crops and manage to get two harvests from the same plot without irrigation. They sow tur, jowar or chaoli and paddy in the same seedling beds. On the borders of these beds, they plant ambadi, lal ambadi or bhindi. After the paddy seedlings are removed for transplanting, the rest thrive on the residue of nutrients not taken up by paddy.

After the quick-maturing paddy is harvested, tur and other crops are planted on the same fields. Other monsoon crops are an oilseed, khorasni and a pulse, udid. The best paddy varieties grow only in good soil which retains its moisture. After their harvest, harbara, val, rai and other crops are grown in these fields since they survive on the residue of moisture in the soil. The legumes help in maintaining soil fertility. Where low-lying land stays damp after the monsoon, a second crop of paddy is often sown.

Some Adivasis intercrop several plants. In the rab where maize is sown, in between the rows of maize, cucumber and bhindi are cultivated. Ambadi, khorasni, udid are cultivated on the border of these rows.

Several other field crops are grown, while some vegetables such as palak and loni and trees such as shevga, mango, bor and other fruit trees are grown in backyards. Cucumbers and pumpkins are trailed over their huts.

Warlis rarely use chemical pesticides because of the harm they do to the paddy ecosystem. Besides, they have their own methods of pest control. When paddy was attacked by the brown spot disease, in order to control it Lahanu Rade suggested putting leaves of a wild tree, khair, in the channel through which the water flowed into the field.

Warlis “plant” branches of trees in their fields for birds to perch on when they search for insects, but since they use those of certain tree species – shindi and kuda – only, it is possible that these also possess some pesticidal action. In fact, probably because of their organic methods of farming, there is little damage by pests. However, the excessive use of synthetic pesticides by neighbouring non-Adivasi farmers is destroying predators as well as creating pests out of normally harmless insects, which sometimes attack their crops with disastrous results.

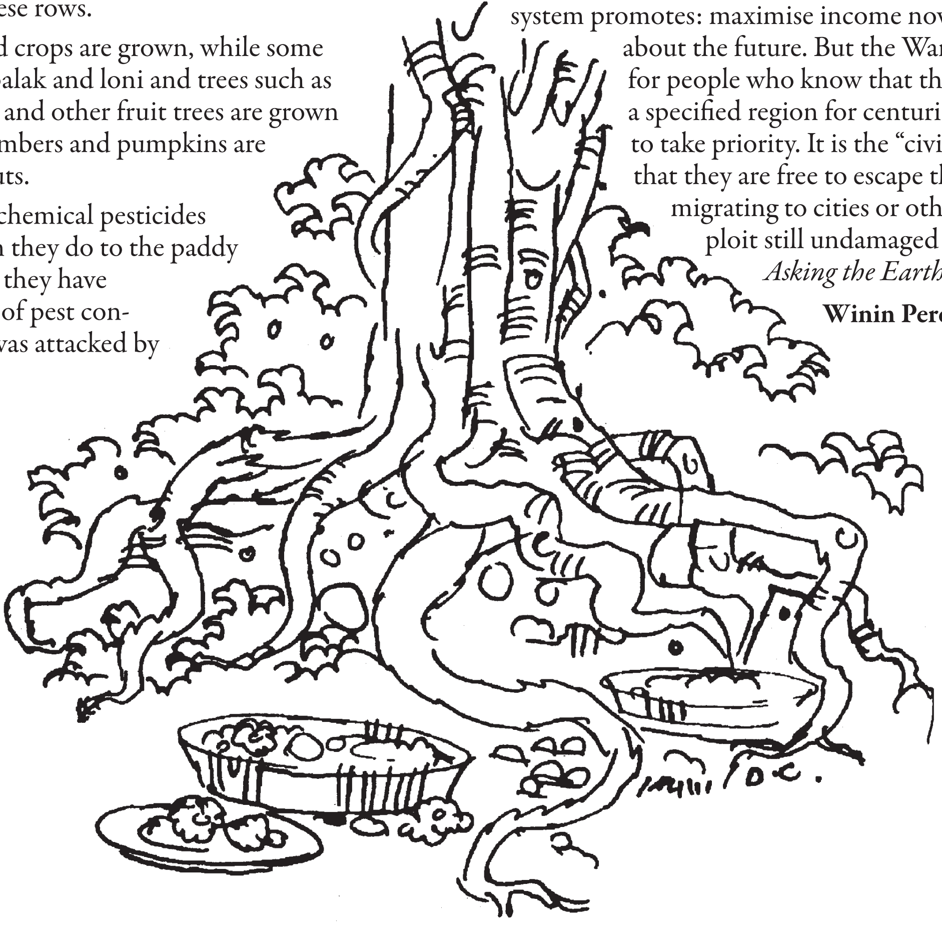
Pest-resistant crop varieties are also chosen. The variety of harbara grown has small pods unlike that usually cultivated as a cash crop by non-Adivasi farmers. It has been found that this latter variety is more susceptible to pests.

Paddy requires good soil for its growth and many Warlis own land on hillsides which is rocky and infertile. But even on these they grow crops like nagli and kodra. Some species of kodra are toxic but they know of ways of detoxifying them. ‘Modern’ agriculture has still to find better methods of using such marginal lands.

However, rice is considered a superior food by the encroaching ‘civilisation,’ even though its nutritional value and yield are less than those of the so-called coarse grains. Some Warlis have stopped growing the latter with a consequent loss in food security as well as nutrition.

Their agricultural practices have the aim of ensuring sustainability even at the cost of low output and immediate income. This is exactly the opposite of what the Western system promotes: maximise income now and don’t bother about the future. But the Warlis’ attitude is normal for people who know that they have to live within a specified region for centuries; sustainability has to take priority. It is the “civilised” who fantasize that they are free to escape their local ravaging by migrating to cities or other countries to exploit still undamaged environments. (From *Asking the Earth*, pp.57-61).

Winin Pereira



In this section, writers examine the introduction of the very idea of chemical farming not just in India but earlier in the West. They next launch a considerable broadside on the environmental impact of the Green Revolution in India, agreeing with Sailen Ghosh that 'there is no salvation except through organic farming.'

Albert Howard notes that chemicals became accidentally available for agriculture after the Second World War when armament factories found they needed a new, extended market to continue to remain in business or perish.

The group of powerful political, business interests and corporations that promoted the Green Revolution in India did it for specific purposes: though the professed aim was allegedly to enhance the quantities of food for the increasing populations, the undisclosed aims were to profit from expansion of the niche available to western agribusiness corporations, from the new markets for both products like fertilizers and the technology to produce such fertilizers.

It does little credit to modern agribusiness and to its votaries within the scientific community when we discover that precious little attention was paid, if ever, to the ecological consequences of the green revolution which are now piling up like unwanted goo all across the planet, particularly in countries like India where introduction of Green Revolution technology has been without any controls whatsoever and has proceeded on an ad-hoc basis till the present day.

Very little attention has been paid to the economic costs of the green revolution: the massive expenditures on huge plants and dams, the financial costs of the energy required in the construction and operation of such mammoth projects, the health costs of a steadily affected population, the enormous costs involved in soil losses from increasingly degraded soils, genetic erosion, and finally, the draining of groundwater aquifers.

What does appear from the analysis and critique in the end is a picture of the true primitiveness of so-called modern agriculture. We find the earlier sophistication of indigenous agriculture replaced by a more simple-minded large-scale project that has remained in nature truly experimental with scientists not knowing what will emerge next from their efforts.

Chapter Three

The 'Green Revolution': Painful Harvest

The origins of the use of chemicals in agriculture worldwide

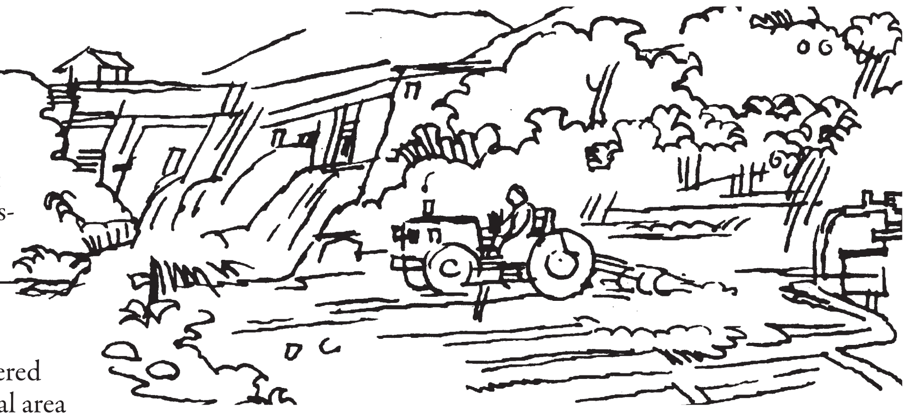
The application of science to agriculture is a comparatively modern development, which began in 1834 when Boussingault laid the foundations of agricultural chemistry. Previously all the improvements in farming practice resulted from the labours of a few exceptional men, whose innovations were afterwards copied by their neighbours. Progress took place by imitation. After 1834 the scientific investigator became a factor in discovery. The first notable advance by this new agency occurred in 1840, when Liebig's classical monograph on agricultural chemistry appeared. This at once attracted the attention of agriculturists. Liebig was a great personality, an investigator of genius endowed with imagination, initiative and leadership and was exceptionally well qualified for the scientific side of his task – the application of chemistry to agriculture. He soon discovered two important things: (1) that the ashes of plants gave useful information as to the requirements of crops and (2) that a watery extract of humus gave little or no residue on evaporation. As the carbon of the plant was obtained from the atmosphere by assimilation in the green leaf, everything seemed to point to the supreme importance of the soil and the soil solution in the raising of crops. It was only necessary to analyse the ashes of plants, then the soil and to apply to the latter the necessary salts to obtain full crops. To establish the new point of view the humus theory, which then held the field, had to be demolished. According to this theory the plant fed on humus. Liebig believed he had shown that this view was untenable; humus was insoluble in water and therefore could not influence the soil solution.

In all this he followed the science of the moment. In his onslaught on the humus theory he was so sure of his ground that he did not call in Nature to verify his conclusions. It did not occur to him that while the humus theory, as then expressed, might be wrong, humus itself might be right. Like so many of his disciples in the years to come, he failed to attach importance to the fact that the surface soil always contains very active humus and did not perceive that critical field experiments, designed to find out if chemical manures were sufficient to supply all the needs of crops, should always be done on the sub-soil, after removing the top nine inches or so. If this is not arranged for, the yield of any crop may be influenced by the humus already in the soil. Failure to perceive this obvious fact is the main reason why Liebig and his disciples went astray.

He also failed to realize the supreme importance to the investigator of a first-hand knowledge of practical agriculture and the significance of the past experience of the tillers of the soil. He was only qualified for his task on the scientific side; he was no farmer; as an investigator of the ancient art of agriculture he was only half a man. He was unable to visualize his problem from two very different points of view at one and the same moment – the scientific and the practical. His failure has cast its shadow on much of scientific investigation of the next hundred years. Rothamsted, which started in 1843, was profoundly influenced by the Liebig tradition. The celebrated experiments on Broadbalk Field caught the fancy of the farming world. They were so telling, so systematic, so spectacular that they set the fashion till the end of the last century, when the great era of agricultural chemistry began to wane. During this period (1840-1900), agricultural science was a branch of chemistry; the use of artificial manures became firmly welded into the work and outlook of the Experiment Stations; the great importance of nitrogen (N), phosphorus (P) and potash (K) in the soil solution was established; what may briefly be described as the NPK mentality was born.

The trials of chemical manures, however, brought the investigator from the laboratory to the land; they came into frequent contact with practice; their outlook and experience gradually widened. One result was the discovery of the limitations of chemical science; the deficiencies of the soil, suggested by chemical analysis, were not always made up by the addition of the appropriate artificial manure; the problems of crop production could not be dealt with by chemistry alone. The physical texture of the soil began to be considered; the pioneering work of Hilgard and King in America led to the development of a new branch of the subject – soil physics – which is still being explored. Pasteur's work on fermentation and allied subjects, by drawing attention to the fact that the soil is inhabited by bacteria and other forms of life, disclosed a new world. A notable elucidation of the complex life of the soil was contributed by Charles Darwin's fascinating account of the earthworm. The organisms concerned with the nitrification of organic matter were discovered by Winogradsky and the conditions necessary for their activity in pure cultures were determined. Another branch of agricultural science – soil bacteriology – arose. While the biology and physics of the soil were being studied, a new school of soil science arose in Russia. Soils began to be regarded as independent natural growths: to have form and structure due to climate, vegetation, and geological origin. Systems of soil classification, based primarily on the soil profile, with an appropriate nomenclature developed in harmony with these views, which, for the moment, have been widely accepted. A new branch of soil science – pedology – arose. The Liebig conception of soil fertility was thus gradually enlarged and it became clear that the problem of increasing the produce of the soil did not lie within the domain of any one science but embraced at least four – chemistry, physics, bacteriology and geology.

At the beginning of the present century, the investigators began to pay more attention to what is after all the chief agent in crop production – the plant itself. The rediscovery of Mendel's law by Correns, the conception of the unit species which followed the work of Johannsen and the recognition of its importance in improvement by selection have led directly to the modern studies of cultivated crops, in which the Russians have made such noteworthy contributions. The whole world is now being ransacked to provide the plant breeders with a wide range of raw material. These botanical investigations are constantly broadening and now embrace the root system, its relation to the soil type, the resistance of the plant to disease, as well as the internal mechanism by which inheritance takes place. The practical results of the last forty years which have followed the application of botanical science to agriculture



are very considerable. In wheat, for example, the labours of Saunders in Canada led to the production of Marquis, an early variety with short straw, which soon covered 20,000,000 acres in Canada and the neighbouring States of the Union. This is the most successful wheat-hybrid yet produced. In Australia the new wheats raised by Farrer were soon widely cultivated. In England the new hybrids raised at Cambridge established themselves in the wheat-growing areas of this country. In India the Pusa wheats covered several million acres of land. By 1925 the total area of the new varieties of wheat had reached over 25,000,000 acres. When the annual dividend, in the form of increased wealth, was compared with the capital invested in these investigations, it was at once evident that the return was many times greater than that yielded by the most successful industrial enterprise. Similar results have been obtained with other crops. The new varieties of malting barley, raised by Beaven, have for years been a feature of the English countryside; the new varieties of sugarcane produced by Barber at Coimbatore in South India soon replaced the indigenous types of cane in northern India. In cotton, jute, rice, grasses, and clovers and many other crops new varieties have been obtained; the old varieties are being systematically replaced. Nevertheless the gain per acre obtained by changing the variety is as a rule small. As will be seen in the next chapter, the great problem of agriculture at the moment is the intensive cultivation of these new types; how best to arrange a marriage between the new variety and a fertile soil. Unless this is done, the value of a new variety can only be transient; the increased yield will be obtained at the expense of the soil capital; the labours of the plant breeders will have provided another boomerang.

A number of other developments have taken place which must briefly be mentioned. Since the Great War the factories then engaged in the fixation of atmospheric nitrogen for the manufacture of the vast quantities of explosives, needed to defend and to destroy armies well entrenched, have had to find a new market. This was provided by the large area of land impoverished by the over-cropping of the war period. A demand was created by the low price at which the mass-produced unit of nitrogen could be put on the market and by the reliability of the product. Phosphates and potash fell into line. Ingenious mixtures of artificial manures, containing everything supposed to be needed by the various crops, could be purchased all over the world. Sales increased rapidly; the majority of farmers and market gardeners soon based their manurial programme on the cheapest forms of nitrogen, phosphorus and potash or on the cheapest mixtures. During the last twenty years the progress of the artificial manure industry has been phenomenal; the age of the manure bag has arrived; the Liebig tradition returned in full force.

The testing of artificial manures and new varieties has necessitated innumerable field experiments, the published results of which are bewildering in their volume, their diversity and often in the conclusions to be drawn from them. By a judicious selection of this material, it is possible to prove or disprove anything or everything. Something was obviously needed to regulate the torrent of field results and to ensure a greater measure of reliability. This was attempted by the help of mathematics. The technique was overhauled; the field plots were 'replicated' and 'randomized'; the figures were subjected to a rigid statistical scrutiny. Only those results which are fortunate enough to secure what has been described as the fastidious approval of the higher mathematics are now accepted. There is an obvious weakness in the technique of these field experiments which must be mentioned. Small plots and farms are very different things. It is impossible to manage a small plot as a self-contained unit in the same way as a good farm is conducted. The essential relation between livestock and the land is lost; there are no means of maintaining the fertility of the soil by suitable rotations as is the rule in good farming. The plot and the farm are obviously out of relation; the plot does not even represent the field in which it occurs. A collection of field plots cannot represent the agricultural problem they set out to investigate. It follows that any findings based on the behaviour of these small fragments of artificially manured land are unlikely to apply to agriculture. What possible advantage therefore can be obtained by the application of the higher mathematics to a technique which is so fundamentally unsound?

With the introduction of artificials there has been a continuous increase in disease, both in crops and in livestock.

Side by side with the intrusion of mathematics into agriculture, another branch of the subject has grown up – economics. The need for reduced expenditure so that farming could yield a profit has brought every operation, including manuring and the treatment of disease, under examination in order to ascertain the cost and what profit, if any, results. Costings are everywhere the rule; the value of any experiment and innovation is largely determined by the amount of profit which can be wrung from Mother earth. The output of the farm and of the factory have been looked at from the same standpoint – dividends. Agriculture joined the ranks of industry. (From *An Agricultural Testament*, pp.185-190).

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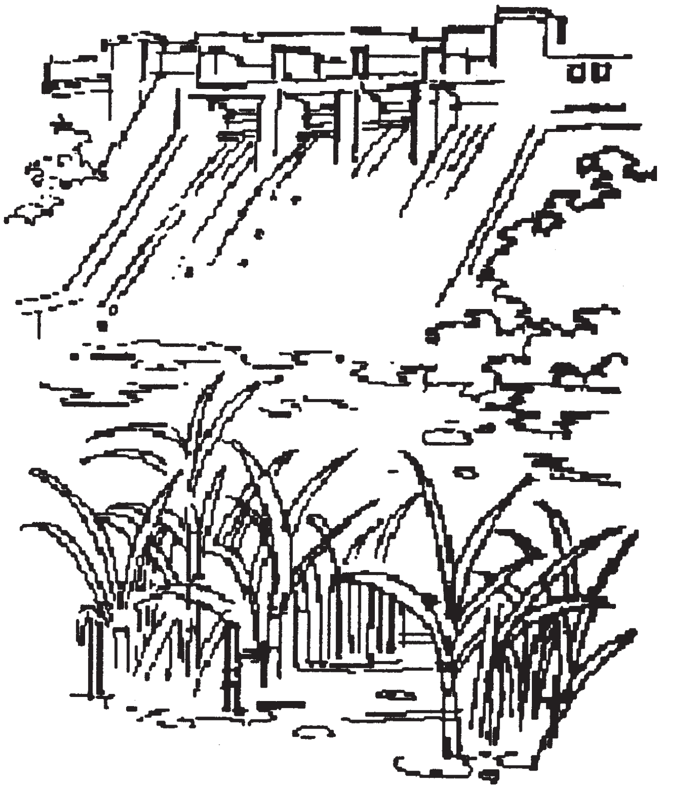
The retreat of the potato crop before blight, eelworm and virus is one of the most disquieting incidents in British agriculture. One of our most important food crops cannot now be grown successfully on a field scale without a thin film of copper salts; a new rotation of crops from which the potato is omitted until the cysts of the eelworm disappear from the soil; a frequent change of seed from Scotland, Wales, or

Northern Ireland. Evidently something is very wrong somewhere, because this crop, when grown in thousands of fertile kitchen gardens throughout the country, is healthy, not diseased. Agricultural science began by fragmenting this potato problem into a number of parts. Potato blight fell within the province of the mycologist; a group of investigators dealt with eelworm; a special Experiment Station was created for virus disease; the breeding and testing of disease-resistant varieties was again a separate branch of the work; the manuring and general agronomy of the crops fell within the province of the agriculturist. The multiplication of workers obscures rather than clarifies this wide biological problem. The fact that these potato diseases exist at all implies that some failure in soil management has occurred. The obvious method of dealing with a collapse of this kind should have been to ascertain the causes of failure rather than to tinker with the consequences of some mistake in management. The net result has been that all this work on the periphery of the subject has not solved the problem of how to grow a healthy potato. This is because direction has been completely lost.

The same story is repeated in manuring: fragmentation has again been followed by loss of direction. Notwithstanding the fact that in the forest Nature has provided examples to copy and in the peat-bog examples to avoid, when devising any rational system of manuring, agricultural science at once proceeded to fragment the subject. For nearly a hundred years some of the ablest workers have devoted themselves to a study of soil nutrients, including trace elements like boron, iron and cobalt. Green-manuring is a separate subject, so is the preparation of artificial farmyard manure and the study of the ordinary manure heap. The weight of produce and the cost of manuring overshadow questions of quality. The two subjects which really matter in manuring – the preservation of soil fertility and the quality of the produce – escape attention altogether, mainly because direction has been so largely lost.

The insistence on quantitative results is another of the weaknesses in scientific investigation. It has profoundly influenced agricultural research. In chemistry and physics, for example, accurate records are everything: these subjects lend themselves to exact determinations which can be recorded numerically. But the growing of crops and the raising of livestock belong to biology, a domain where everything is alive and which is poles asunder from chemistry and physics. Many of the things that matter on the land, such as soil fertility, tilth, soil management, the quality of produce, the bloom and health of animals, the general management of livestock, the working relations between master and man, the *esprit de corps* of the farm as a whole, cannot be weighed or measured. Nevertheless their presence is everything: their absence spells failure. Why, therefore, in a subject like this should there be so much insistence on weights and measures and on the statistical interpretation of figures? Are not the means (quantitative results and statistical methods) and the subject investigated (the growth of a crop or the raising of livestock) entirely out of relation the one to the other? Can the operations of agriculture ever be carried out, even on an Experiment Station, so that the investigator is sure that everything possible has been done for the crop and for the animal? Can a mutually interacting system, like the crop and the soil, for example, dependent on a multitude of actors which are changing from week to week and year to year, ever be made to yield quantitative results which correspond with the precision of mathematics?

The invasion of economics into agricultural research naturally followed the use of quantitative methods. It was an imitation of the successful application of costings to the operations of the factory and the general store. In a factory making nails, for example, it is possible, indeed eminently desirable, to compare the cost of the raw material and the operations of manufacture, including labour, fuel, overhead expenses, wear and tear and so forth, with the output and to ascertain how and where savings in cost and general speeding up can be achieved. Raw materials, output and stocks can all be accurately determined. In a very short time a manufacturer with brains and energy will know the cost of every step in the process to the fourth place of decimals. This is because everything is computable. In a similar manner the operations of the general store can be reduced to figures and squared paper. The men in the counting-house can follow the least falling-off in efficiency and in the winning of profit. How very natural it was some 30 years ago to apply these principles to Mother earth and to the farmer! The result has been a deluge of costings and of agricultural economics largely based on guesswork, because the machinery of the soil will always remain a closed book. Mother earth does not keep a pass book. Almost every operation in agriculture adds or subtracts an unknown quantity to or from the capital of the soil – fertility – another unknown quantity. Any experimental result such as a crop is almost certain to be partly due to the transfer of some of the soil's capital to the profit and loss account of the farmer. The economics of such operations must therefore be based on the purest of guesswork. The results can hardly be worth the paper they are written on. The only things that matter on a farm are these: the credit of the farmer – that is to say what



other people, including his labour force and his bank manager, think of him; the total annual expenditure; the total annual income and the annual valuation – the condition of the land and of the live and dead stock at the end of the year. If all these things are satisfactory nothing else matters. If they are not, no amount of costings will avail. Why, therefore, trouble about anything beyond these essentials?

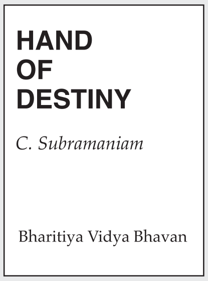
But economics has done a much greater disservice to agriculture than the collection of useless data. Farming has come to be looked at as if it were a factory. Agriculture is regarded as a commercial enterprise; far too much emphasis has been laid on profit. But the purpose of agriculture is quite different from that of a factory. It has to provide food in order that the race may flourish and persist. The best results are obtained if the food is fresh and the soil is fertile. Quality is more important than weight of produce. Farming is therefore a vital matter for the population and ranks with the supply of drinking water, fresh air, and protection from the weather. Our water supplies do not always pay their way; the provision of green belts and open spaces does not yield a profit; our housing schemes are frequently uneconomic. Why, then, should the quality of the food on which still more depends than water, oxygen, or warmth be looked at in a different way? The people must be fed whatever happens. Why not, then, make a supreme effort to see that they are properly fed? Why neglect the very foundation stone of our efficiency as a nation? The nation's food in the nature of things must always take the first place. The financial system, after all, is but a secondary matter. Economics therefore, in failing to insist on these elementary truths, has been guilty of a grave error of judgement.

In allowing science to be used to wring the last ounce from the soil by new varieties of crops, cheaper and more stimulating manures, deeper and more thorough cultivating machines, hens which lay themselves to death, and cows which perish in an ocean of milk, something more than a want of judgement on the part of the organization is involved. Agricultural research has been misused to make the farmer, not a better producer of food, but a more expert bandit. He has been taught how to profiteer at the expense of posterity – how to transfer capital in the shape of soil fertility and the reserves of his livestock to his profit and loss account. In business such practices end in bankruptcy; in agricultural research they lead to temporary success. All goes well as long as the soil can be made to yield a crop. But soil fertility does not last forever; eventually the land is worn-out; real farming dies. (From *An Agricultural Testament*, pp 199-202).

Albert Howard

Green Revolution Books and Reports

Hand of Destiny: (Vol.2) The Green Revolution



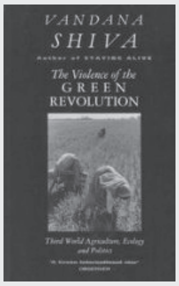
By C. Subramaniam
Bharatiya Vidya Bhavan

Pp.361 (1995)
(HB) Rs. 275

The second volume of Subramaniam's autobiography deals with the critical period from 1964 onwards which saw the introduction of the Green Revolution.

One of the first things Subramaniam reveals is that when he took over as Minister for Agriculture, he started looking for a new secretary for the department. For this, he says, he consulted the experts in the Ford Foundation and asked them whether they had come across any officer in the Indian Government who could be brought in as secretary. The Foundation suggested two names. Narasimhan and Sivaraman. Eventually Sivaraman was appointed as secretary. Apparently the Ford Foundation kept detailed tabs and dossiers on the entire Indian Administrative Service.

The Violence of the Green Revolution


VANDANA SHIVA
The Violence of the GREEN REVOLUTION
Third World Agriculture, Ecology and Politics

By Vandana Shiva

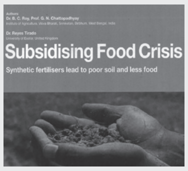
Rs. 195

This is a major book on the green revolution and the violence that it engendered in its wake. The book examines the social and ecological impact of the green revolution project. It shows how the social and political conflicts generated by the new technology soon tore Punjab apart. (The book was written in the heydey of the violence that convulsed the State of Punjab.)

As S.G. Kabra has documented towards the end of this chapter, the health impacts are now only now rearing their head in the form of the most deadly cancers.

Violence of the Green Revolution can be ordered from www.navdanya.org. The listed price is Rs.195.

Subsidising Food Crisis



By Dr. B. C. Roy, Prof. G. N. Chattopadhyay, Dr. Reyes Tirado

Download free from
www.greenpeaceindia.org

A joint effort by scientists from Greenpeace and Institute of Agriculture Visva Bharathi University, West Bengal, it offers a scientific analysis linking the increasing fertiliser subsidies to yield stagnation in agriculture.

It establishes beyond doubt that after years of indiscriminate use, synthetic fertilisers are currently hampering the increase of food production. Whereas earlier 1 kg of fertilizer would get 25 kg of grain output, today 1 kg will only produce 8 kg.

The report also shows how India can reduce its contributions to greenhouses gases by converting its agriculture to organic. A shift from synthetic nitrogen fertilisers to efficient and ecologically safe inputs like compost will reduce this contribution from 6 to 2 %.

The Entry of Chemicals into India's Agriculture

The first chemical fertilizer factory was started in 1906 by the E.I.D. Parry Group at Ranipet to manufacture superphosphate (incidentally the very same Parry Group is today pioneering in the production of organic manures). The Mysore Chemicals and Fertilizers Ltd. began to produce nitrogenous fertilizers at Belagola near Mysore in 1941 based on synthetic ammonia. In 1947 large-scale production of indigenous fertilizer was started by Fertilizers and Chemicals, Travancore Ltd. (FACT) at Udyogamandal near Cochin. The factory used wood as a raw material to produce ammonia.

Stimulated by the great Bengal famine of 1943, the Government of India set up a factory at Sundri in Bihar for the manufacture of 3,55,000 tonnes of ammonium sulphate per annum. Thus at the time of India's independence the fertilizer industry was extremely small and consumption of fertilizers in Indian agriculture amounted to 35,000 tonnes of Nitrogen, 4,400 tonnes of Phosphorus and 1,800 tonnes of Potash. In 1951, after India had to import 3.4 million tonnes of foodgrains from USA, it submitted a proposal for technical and economic assistance including fertilizer projects and fertilizer experts. US technicians led by Dr. F.W. Parker, a fertilizer expert, arrived in India in December 1952 to establish the US technical mission and to develop the Indo-American programme. Parker played an important role in advising the government to promote chemical fertilizer.

The technical assistance programme in fertilizer use developed under the advise of the Americans included extensive chemical fertilizer experiments throughout India and the organisation of a fertilizer trade association. The chief result of the demonstration was to create a demand for chemicals. The technical mission also sought the introduction of new fertilizer materials including urea and ammonium phosphate.

The Fertilizer Association of India was organized in 1955 and its charter directed it singularly to promote the use of chemical fertilizers throughout the country.

In 1956, Dr. S.K. Mukherjee, a director of the Fertilizer Corporation of India visited the USA and Europe. He wrote a report on the advances in the field of chemical fertilizers in these countries and set out to convince policy makers about the necessity of urea production in India.

The Fertilizer Corporation of India was formed in 1961. It today owns 3 of the world's largest coal based fertilizer projects: Talcher, Ramagundam and Korba. The old Sundri plant which was commissioned in 1951 was modernized and expanded and went into commercial production in 1979. At the time that the Sundri plant was planned, it was thought that one big concentrated plant of this kind was sufficient to meet the total assessed needs of the country. But it soon became apparent that more such units would be required. Accordingly, committees were set up to examine new locations and capacities and came up with recommendations for putting up fresh nitrogen capacities at (a) Nangal (b) Trombay (c) Namrup (d) Rourkela (e) Gorakhpur (f) Neyveli.

The official thinking of the Government of India on the production and distribution has remained unchanged since 1964 when it was first reflected in the Sivaraman Committee Report on Fertilizers. The Committee had the following to say on the role of chemical fertilizers in Indian agriculture: 'World experience has shown that the efficient use of fertilizers can step up production manifold. This is particularly important where land for cultivation per family is limited to a small acreage, as in India. It has been generally accepted that the use of about 93,500 short tons of plant nutrients would be equivalent to adding a million acres of average crop land in terms of additional production. An intelligent and sufficient application of the proper types of fertilizers is, therefore, of strategic importance in our campaign to increase agricultural production. Manures can be organic or inorganic. Both types are necessary for good agriculture. The availability of organic manures is dependent on the extent to which green-manuring crops can be grown in the fields, in addition to the making of compost and farmyard manure. The availability of farmyard manure and compost is limited as compared with the needs of cultivated crops. The cultivation of green-manuring crops has to fit in with the crop pattern and is possible under irrigated conditions. As their cultivation competes with the seasonal cash crops, it is difficult to persuade the cultivators to take up the raising of green-manuring crops in a big way. The only way by which the manurial requirements can be met effectively, therefore, lies in the application of chemical fertilizers to the crops. Soil tests indicate that almost all soils in India must have additional nitrogen; about 85 percent of the soils need additional phosphorus and nearly 63 percent of them require potash, if crop yields are to be increased by 50-100 per cent. In India, the low level of soil fertility limits crop production more than any other single factor. Against this background, the programmes of intensive cultivation, particularly under irrigated and assured-rainfall conditions, are being undertaken for achieving better results in agricultural production. However, the intensive cultivation of crops will deplete the soil of its nutrients at a rapid rate. Unless the nutrients are replaced in the soil by massive doses of chemical fertilizers the land will not continue to meet our needs of greater agricultural production vis-a-vis the unrestricted increase in our population.'

By September 1980, the country had more than 100 fertilizer plants with the largest concentration along the coastal areas. Today, the country is the fourth largest fertilizer producing country in the world. Throughout this entire development, there has been very little consciousness at the government level on the environment consequences of such indiscriminate and uncontrolled spread of chemical fertilizers. This is all the more amazing since during the period of these developments, there were already reports emerging of the impact of chemical fertilizers in the so-called industrial countries.

The other significant point to make is that by and large the newer fertilizer plants have been based more on petro-chemical resources for which the country is already paying a very high price. This is because in 1973 world prices of petroleum products went through the roof. Even at that time, the government had to raise the price of fertilizers by 100 per cent as a result. Today such subsidies run into thousands of crores (Rs.120,000 crores in 2008-09, exceeding in fact the defence budget. — C.A.

The 'Green Revolution': A Historical Perspective

The British Colonial Policy and Agriculture in India

The history of modern agriculture in India begins in 1757. Indians lost the Battle of Plassey to the East India Company. By 1765, large territories of India, particularly in the provinces of Bengal, Bihar and Orissa, had come under the control of the Company – and agriculture in India had become subject to the British administration and its modernising influences.

It was the civilization of independent agriculturists – organized as autonomous villages – cultivating their land to fulfill their needs. These autonomous villages organized their own economic and political institutions, including the manufacturing activities. No external Government, no external industry, no market dictated what they may or may not do or produce. Such was the independent agriculture that moved into British hands through the events following the defeat of 1757.

The Britishers had no use for this Indian concept of agriculture as an autonomous way of life. In their eyes, the agriculture on which they acquired control was nothing but a source of revenue.

The independent cultivator of yester-years, who cultivated his land to fulfil his needs, now had become a tool to produce revenues that would fuel the Industrial Revolution of England. He would eat only after the demands of that Revolution were met. And if after meeting those demands, nothing was left to eat, he may as well have died, as many of them did.

This change of view of agriculture from a source of life in India to source of 'progress' in England brought in its wake untold misery. Irrigation works fell into dilapidation. Vast tracts of cultivable land decayed into a state of jungle. Industry got uprooted. Education got destroyed. All philosophical, scientific and literary activity came to a standstill. People died and the culture stagnated.

India was never to be the same again. The villages and the agriculturists living there were never to become autonomous again. Never again would there be independent cultivators, cultivating their land to fulfil their needs. Those needs would always be subservient to the needs of the state, the industry and the market - all of which were now severed from agriculture. Agriculture was never again to become a way of life. It had become a mere economic activity. It had been finally 'modernised'.

The major instrument of this modernisation, besides the naked force used by the early Britishers, was the system of landlordship introduced into India for the first time. Independent cultivators, cultivating their own piece of land, were not likely to put external economic needs before their need to eat and clothe. A landlord, however, assured of his personal well-being, could be relied upon to produce and sell what the industry or state needed. He could be relied upon to respond to the market. He could be relied upon to divert good foodgrain land to opium, indigo and so on, while famines stalked the country. By making agriculture responsive to the market and the state the landlord became the modernising force.

How successful were the Britishers in modernising Indian agriculture – in making it responsive to the needs of the industry and the vicissitudes of the market – can be gauged from the crop output data of the last fifty years of the British rule. The Central Government had started publishing such data by the late nineteenth century. The period before the first World War was marked by a favourable world market in all export crops, and expansion in the domestic manufacturing capacity in textile and jute. Consequently we find Indian agriculture flourishing in this period – agricultural output rising at a rate faster than the growth of population. It is perhaps one of the best periods in British Indian agriculture, with per capita food availability hovering around 540 gms per day throughout this period in spite of substantial exports of rice and wheat. Then came World War I, followed by the Great Economic Depression, and World War II. Export markets contracted. Prices of agricultural products crashed. And Indian agriculture took a nose-dive. While non-foodgrain production merely stagnated, the foodgrain production started showing a declining trend even when population was rising. Per capita food availability for the quinquennium ending 1946 was down to 417 gms per day in spite of some imports. Interestingly the only crop that showed expansion in this period was sugarcane which was granted protection by imposing new tariffs on import. While famine was on the horizon, the area under this commercially favoured crop actually increased by about 40 per cent between 1930-31 and 1938-39.

Thus, in this fifty year period we see the agriculture going up or down with the worldwide economic forces. These forces, and not the needs of the people decided how much of what the Indian agriculture would produce. Economics had won, life had failed.

Post-independence pre-green revolution

Independence came to India at a time when agriculture was passing through a particularly bad phase. Bengal had just passed through a major famine. Per capita food availability was dangerously low (417 gms/day in 1946). Rural indebtedness had been increasingly alarming – according to the Central Banking Enquiry Committee, rural indebtedness had nearly doubled between 1929 and 1936. Cultivators were finding difficulties meeting their fixed liabilities such as rent, land, revenue, etc. Many agriculturists were turning into landless labourers (NCAR, Vol.1, p.199). Partition of the country worsened the situation further, and the country was facing an acute shortage of both the commercial crops and the food crops (NCAR, Vol.1, p.219). Something needed to be done immediately to improve agriculture.

An obvious line of action was to concentrate on improving irrigation facilities that had been severely depleted with partition (only 19.7 per cent of the net sown area within the Indian Union was irrigated), and to take steps to put the cultivators back on the land and reduce rural indebtedness through land reforms. Some sort of land reforms had in fact become a political necessity, given the aspirations that people associated with independence. Action on both these fronts was started immediately after independence. Between 1947-48 and 1949-

50 the net irrigated area increased from 18.9 mha to 20.2 mha – most of the increase coming from increase in the area irrigated by wells and other minor sources (NCAR, Vol.1, p.221). Irrigation facilities kept on increasing at roughly the same pace – achieving an annual rate of increase of 0.67 mha of gross irrigated area for the period 1950-51 to 1968-69 (NCAR, Vol.V, p.43). Land reforms were initiated by most states by 1950. These envisaged abolition of Zamindari, security of tenure for tenant cultivators and fixation of reasonable rents; later some ceilings on land holdings were also introduced. Though carried out in a half-hearted manner, these land reform measures continued to provide some relief to the cultivators right through the fifties and early sixties.

Agricultural production responded well to the restoration of some just order in land relations and to the slowly increasing irrigation facilities. Aggregate crop-output during the fifties kept on increasing at a rate faster than the population growth. Both the area under crops and the yield per hectare of almost every crop showed a rising trend.

However, Independent India also wanted to become 'modern' and 'industrialized'. And for the modernising industrializing India, it was not enough that agricultural output should increase. It was also important that agricultural production should respond to the needs of the market. In particular, it was important that food should come to the market for sale. Because, as the NCAR (Vol.II, p.14) noted, 'The entire industrial sector depends heavily on the supply of food from the agricultural sector. Since a sizeable part of the wages of the industrial worker is spent on food items, a sustained supply of food from agricultural sector is a necessary condition for stability in the industrial sector...'. But production rising through the expansion of irrigation and land reforms was just not coming to the markets to reach the industrial sector. The National Commission moaned that, 'The unique features of the food situation during the Second Plan period were the increasing demand for food grains and a steady decline in market arrivals despite higher production' (NCAR, Vol.I, p.188). It may be that part of the reason for this phenomenon was 'speculative holding of stocks by the grain trade'. But that does not seem to be the only cause, since various experiments of introducing control in the food trade did not help matters and the urban industrialized sector had to be fed with increasing imports till mid-sixties. It seems more probable that the general improvement in the land relations and irrigation which were the causes of the increased production also improved the lot of the cultivators – and they simply ate more. This is what is likely to happen in a situation where the average per capita availability of food was low (around 460 gms in 1960-61) and a large proportion of rural population (around 40 per cent in 1960-61 according to Dandekar and Rath, 1971) had insufficient purchasing power to buy the bare minimum of 2,250 calories of food per day. Any increase in production achieved over a wide production base under such circumstances is not likely to reach the market. This tendency was further encouraged by the fact that agricultural production in the fifties and early sixties was by and large independent of inputs from outside the agricultural sector. As the National Commission on Agriculture noticed, production depended largely on the amount of labour the cultivator was able or prepared to put in. All inputs were farm produced (Vol.II, p.9). So the agriculture was becoming independent of the urban sector both on the input side and the output side. To the extent it was being freed from the yoke of landlordism it was once again showing traditional characters of being self-sufficient – the characteristics that the Britishers suppressed precisely through landlordism.

Thus resulted the dilemma of increased production and declining market arrivals along with increasing independence of the agricultural sector from the urban sector. The Indian planners saw the solution – in making the areas which were already surplus in food, more surplus. The idea was to concentrate resources in those areas that were already well-endowed. Such areas being already surplus would have no alternative but to bring their extra production to the market and transfer it to the industrial sector. In this scheme there was no danger of the producers consuming the increased produce as was bound to happen when the resources were allowed to flow to the deficit areas. This line of approach in fact was introduced into Indian agricultural planning rather early. 'Instead of spreading the efforts thin all over the country it was decided in 1950-51 to concentrate such efforts in compact areas called intensive cultivation areas which possessed assured water supply and fertile soils' (NCAR, Vol.I, p.143). In 1959, 'the Agricultural Production Team of the Ford Foundation recommended the intensive approach anew', (ibid, p.149). And with the visible failure in the Second Plan to get the food to the market in spite of increasing production, a new Intensive Agricultural District Programme (IADP) was launched in the closing years of the Second Plan. The expressed objective of the programme was to concentrate resources and efforts in specially endowed areas to achieve a quick break-through in production. The programme was expanded in 1964 under the name of Intensive Agricultural Area Programme (IAAP) to cover more of the well-endowed areas. All along, it was made sure that only areas with adequate production potential in terms of assured water and infrastructural facilities be chosen, and that emphasis be directed towards profitability at the farm level.

The ostensible argument in favour of these 'intensive' approaches was that resources spread thin over a large area are

The 'Green Revolution': Who's Baby Was It?

John P. Lewis includes in his book on India's Political Economy a copy of the letter he wrote (see alongside) to the US administration on how they got the Indian government to implement the green revolution without consulting the Cabinet....

"The outcome is all the healthier because our specific role in the exercise has been closely held; indeed, most of the Indian cabinet are not fully aware of it."

The Administration has a right to feel proud of the progress of its India policy since I last wrote you a month ago about the problems of aid resumption. The US has helped engineer what could be a breakthrough for Indian agricultural expansion:

a. The new near-term and longer-term agricultural programme that Subramaniam, with Shastri's support, pressed through the Cabinet and announced in Parliament the week of December 5 has more solid content and promise than any comparable programme since Independence. It is more radical in its emphasis on

* fertilizer imports

* enlistment of foreign private investment in fertilizer, pesticide, and seed production, and

* resort to the free market, especially for fertilizer distribution, than anyone could safely have forecast even two months ago.

b. Certainly the timing and probably the content of the new programme owe much to US pressure—both our recent generalised pressure on behalf of agricultural self-reliance and the specific negotiations that reached high gear in the Freeman—Subramaniam Rome talks.

c. The outcome is all the healthier because our specific role in the exercise has been closely held; indeed, most of the Indian cabinet are not fully aware of it.

d. The timing as well as the substance of the President's December 9 announcement of the 1.5 million tonnes of wheat and the $50 million fertilizer loan admirably met the internal Indian political need for a forthcoming US gesture before the Johnson-Shastri talks—especially since the 'gesture', instead of being cosmetic, was so plainly responsive to urgent practical needs.

e. Our concern over the near-term food emergency has been emphatic, conspicuous; is appreciated, is helping intensify India's own preparations for the emergency. (We shall of necessity be so heavily engaged in this quarter in the next few months that we must take particular pains not to lose sight of the longer-term possibilities and issues that mainly concern us.)

f. The agriculture and food momentum established earlier in the month was reinforced during Subramaniam's Washington talks.

g. In some ways the most auspicious development of all has been the Indian Government's reaction to our performance conditioning of the $50 million fertilizer loan:

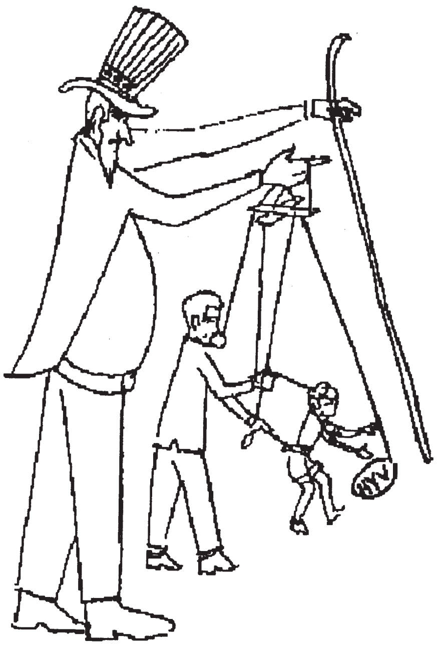
* The assurances we asked were all sensible, all economic, all in the Indians' own interest; and we emphasised (i) the directness of our (PL 480-connected) concern over the adequacy of the Indian agricultural effort and (ii) the fact that this new style of AID lending is being adopted worldwide, not just for the subcontinent.

* Nevertheless our list of conditions was a yard long and of a kind which would have made the Indians bridle a few months ago.

* Not only did the Government of India give all the requested assurances, including its determination to recruit foreign private investment in about 1 million tonnes (nitrogen equivalent) of new fertilizer production capacity during the next six months; it gave the assurances briskly and cheerfully, agreeing readily to periodic reviews of progress. Moreover, this streamlined negotiation was conducted, not with Subramaniam's Food and Agricultural Ministry, but with T.T. Krishnamachari's Finance Ministry.

* Obviously, the negotiation was facilitated by the fact that the Indians had just adopted most of our conditions on their own the week before. But the very fact that they had done this and then immediately observed the way good self-help pays off should speed the acceptance of similarly conditioned assistance in the future.

(From: *India's Political Economy*, pp. 113-115).



India's Political Economy
By John P. Lewis
(1995) (HB) Rs.495.

lost leaving no appreciable effect on production; that only a package of practices involving concentrated doses of resources could be technologically effective; and that increased production achieved in these areas with improved practices would have a 'demonstration' effect in other areas. The latter argument obviously had no weight – there were just not sufficient resources to spread such 'intensive' practices elsewhere – especially in areas which were to begin with not 'well-endowed'. As for the other argument of technological efficacy of an intensive package the fact is that there were no agricultural technologies in use that could absorb and respond to intensive doses of resources.

Therefore it is not surprising that the efforts of Indian planners to achieve increased production through 'improved' practices in areas which did have access to facilities like supply of water and manure, should prove abortive. In fact, the attempt was a complete failure. According to NCAR (Vol.I, p.411) rice yields in the twelve rice districts and wheat yields in the four wheat districts under the IADP, averaged only 13.3 quintals and 13.5 quintals per hectare compared to the pre-package average of 12.4 and 10.2 quintals. As against these marginal increases in yields, the added costs of the recommended packages were equivalent to 10 quintals of wheat on the average, and 10 to 12.4 quintals paddy for most of the districts. The efficiency of the package for other crops was even worse.

Thus, the intensive package approach to agricultural development being tried out in India since the fifties had really nothing to do with technological efficacy. The policy in fact only expressed a political wish for a technology that would respond to these measures – a technology that would allow the concentration of resources and production in a few compact already surplus areas. The policy was asking for a technology that would achieve technologically what was achieved by the Britishers politically through the landlords – namely, responsiveness of agriculture to the needs of the industry and the market in preference to the life-needs of the cultivators.

In other words, the development sought for in the agricultural sector was not one that would primarily meet the needs of the rural population, but one that would provide resources and capital needed for the industrialization taking place in the urban centers. What was needed was to break the independence of the rural sector and bring it into increasing dependence on the urban sector; make it enter into increasing exchange relations with the latter – the terms of exchange being manipulated to be so unequal as to enable the urban sector to extract the maximum possible surplus from the rural sector. Thus, the need was for a certain technology to be introduced into the agricultural sector that would bring about such a transformation. No such technology was available at the time the intensive approach policy was being formulated and implemented.

By mid-sixties, however, such a technology became available in the form of new 'miracle seeds' that had proved successful in Mexico. These seeds were genetically selected to absorb huge doses of chemical fertilizers. Since these seeds had not evolved under natural conditions, they were susceptible to a number of pests and pathogens and needed to be grown under the protective cover of pesticides. The new seeds also required new sophisticated practices for irrigation, tillage etc. This was just the ideal technology to fit the bill. It would make the policy of concentration of resources economically and technologically viable. At the same time it would make the agriculture critically dependent on industrial inputs like chemical fertilizers and pesticides, and make the cultivator dependent upon the urban expert for the knowledge of the correct agricultural practices, thus removing the 'dangerous tendency' of self-sufficiency in the agriculture sector for good.

This technology, being so expensive could not possibly be extended over the whole country. But that did not matter. All that was required was to make the surplus areas a little more surplus, so that the urban-industrial sector would be assured of its requirements. However there was a snag. Acceptance of this technology would involve import of large amounts of fertilizer and pesticides, for India did not produce these. In the initial stages even seeds would have to be imported.

Providentially, there was a widespread failure of monsoon in 1965 and 1966 in India, as well as over the rest of South Asia and South East Asia. This failure led to the spectre of a major famine – foreign experts predicted doom, some of them suggesting the possibility of one million starvation deaths in Bihar alone (NCAR, Vol.I, p.27; Speech of the Chairman, NCAR, Shri C Subramanian). This situation removed all hesitation about accepting the new seeds even if it involved massive imports. The ever helpful attitude of the Ford Foundation and the Rockefeller Foundation further encouraged the acceptance of the new technology. And in 1966-67 the New Strategy of Agricultural Development, with the programme of introducing the new technology, mainly in the areas covered by IADP and IAAP was launched. Similar programmes were adopted in all of South and South East Asia at around the same time. The programme was declared an immediate success. This success is what came to be known as the Green Revolution.

J.K. Bajaj

The inefficiency of Western agriculture

The Western agricultural system is considered a model of success, to be closely copied by other farmers, but an examination of its practices reveals that it is inherently self-destructive and unsustainable. It illustrates how initial unsustainable practices produce ripple effects and positive feedback which soon engulfs the whole system.

The displacement of Native Americans and other indigenous peoples allowed the invading and immigrating European occupants to possess huge farms. These farms required the use of machines which consumed large quantities of non-renewable fossil fuels. The machines required the cultivation of the same crop year after year, which reduced biodiversity. Farm machinery reduced the need for farm labour, forcing those who did not own land, to move into cities. The high cost of machines required a higher productivity which led to the selection of crop varieties which gave a high yield but were more susceptible to pest attack. This required the use of synthetic pesticides, which also killed predators, resulting in further disharmony. The insects developed resistance to most of the pesticides, making the whole “science” of pest control pointless. Pesticides also harmed useful organisms in the soil, micro-organism as well as larger creatures like earthworms. New biotechnological solutions are being promoted now, but since they cause further disharmony – modification of the genetic makeup – they must result in more problems, some of which are already appearing as pest resistance, but others could appear after decades of use.

The monocultures of high yielding seeds required external inputs of synthetic fertilizer to be brought in to replace the lack of recycled organic sources. This unbalanced the system further since the fertilizers destroyed soil organisms. They damaged the rhizobia that fix nitrogen and other micro-organisms that make phosphates available to plants. Earthworms and other soil creatures that condition the soil and recycle organic matter were also killed. All of these effects reduced crop yields in the long run. Some of the imbalances attracted pests to the crops and encouraged them to thrive. The damaged soil was easily eroded by wind and water. The eroding soil required the use of continuously increasing quantities of fertilizers, much of which was washed or leached into surface and underground water sources.

The high use of fertilizer led to a proliferation of weeds. Those which could not be controlled by the use of machines, were treated with herbicides. The herbicides killed many of the wild relatives of crop plants that grew nearby, reducing biodiversity. Weeds are now being found that have developed resistance to herbicides. The situation is seen as so serious, that several members of the US Congress have introduced a bill to prohibit federally sponsored research on herbicide-resistant plants.

The contamination of the water, air and soil with toxic synthetic fertilizers, pesticides and herbicides leads to increasing deaths of other creatures, and to human illness and mortality, too. This results in a further loss of biodiversity and harmony. Huge sums have now to be spent to purify water, particularly for drinking purposes. The toxins are now present in most of the foods grown, but food cannot be decontaminated at all.

The high yielding varieties usually require heavy irrigation because the new breeds cannot stand normal water stresses. This has caused extensive salinity and waterlogging, removing fertile land from cultivation, some of it permanently. It also leads to the overdrawing of underground waters in total disregard of sustainability.

The high costs of inputs leads to the need for subsidies to make agriculture economical. The subsidies are set so that the price of farm produce is lower than world market levels, enabling profitable exports. The demand for crops for export leads to the farming of arid regions, requiring more irrigation, resulting in the mining of underground water. As the water tables fall, more energy is required to lift the water.

Today, agribusiness thrives on the manufacture and supply of all these inputs, and controls agricultural policies of governments. These companies are concerned only with profits from the sales of their products, even if their use adds to unsustainability.

Synthetic fertilizers, pesticides and herbicides are made from non-renewable raw materials (mineral oil and natural gas) or from minerals that are fast depleting (phosphate and potassium ores). They use enormous amounts of non-renewable fuel for their manufacture. The cost of petrochemicals is increasing day by day due to the rising costs of raw materials and energy. There is also a large dependence on imports which makes dependence on them unsustainable.

Ultimately, it will be the global demand for oil and natural gas for fuel that will determine the price and the availability of fertilizers, pesticides and other agrochemicals. Although the requirements of raw materials for petrochemicals are a small fraction of the total production, prices will be determined by their use for energy.

The increasing inputs, expensive machines, seeds, fertilizers, pesticides, and herbicides, force farmers to farm larger areas in order to obtain a reasonable income. They also push small farmers out of agriculture, as they go deeper into debt.

The huge farms require the produce to be transported long distances to nearby towns and faraway cities. This requires fossil fuels for transport as well as for the processing, packaging and refrigeration of the produce.

Western agriculture is in total disharmony with Nature. Its gross interference affects the delicate balances in the environment. But the West sees the consequent protests of Nature as constraints on its progress to be overcome by “higher” technology, rather than a warning to restore the balance – if that is at all possible, without a total wiping out of the present agricultural-industrial-economic system.

A report in the *New Scientist* states: ‘The capacity to produce food in the US is not sustainable, and is already diminishing. It is water and soil that govern the limits to food production.’ (From *Tending the Earth*, pp.27-30).

* * *

The excessive use of fossil fuels by the West has resulted in their near exhaustion and the pollution of the atmosphere to such an extent that direct damage to plant and animal life is already occurring, while climatic change appears to be imminent.

Western agriculture is totally dependent on fossil fuel for the production of agrochemicals: fertilizers, pesticides, herbicides, plastics and other inputs; directly as a fuel to power tractors, harvesters, threshers, and other machines and to manufacture these machines; for the housing and feeding of poultry and cattle, for heating greenhouses for vegetables, refrigeration in transport and storage, and for many other uses. Oil and natural gas are also used as raw materials for synthetic agrochemicals.

Fossil fuels are non-renewable and there are limited quantities of them available on the planet. It is predicted that oil and natural gas will be nearly exhausted in a few decades, while coal may last a little more than a century. Other factors, such as a lack of foreign exchange, political unrest in the Gulf, or the cornering of supplies by powerful countries, could make them scarce and raise prices drastically. This would make its use uneconomical for agricultural or industrial purposes.

It is evident that no system that uses large quantities of fossil fuels is sustainable. Even if consumption is drastically reduced, it will merely postpone the moment of final reckoning. Yet Indian agriculture is showing a dangerous, increasing dependence on such energy.

Renewable energy, whose total contribution to global energy use is only about 12 per cent today, cannot supply the wants of a hyperconsumptive society (From *Tending the Earth*, p.30).

◆

When a crop is grown, a part of the soil fertility is incorporated into various parts of the plant. The roots usually remain in the soil, the leaves and stems are fed to cattle, burnt as fuel or directly returned to the soil. Part of what is consumed by cattle and humans in the locality also goes back to the soil. In subsistence farming, all nutrients are recycled locally. But with commercial farming, there is the continuous 'export' of the soil's fertility because organic matter constantly leaves the locality. The soil nutrients incorporated into vegetables, grass, grains and timber, are exported from the field or forest. For sustainability, only that much organic matter can be exported as is replenished by the nitrogen and carbon naturally fixed in the region. And even then, the problem of supplying phosphorus and other essential nutrients remains.

The 'import' of synthetic fertilizers to the field cannot compensate for the loss of exported nutrients. Synthetic farming gives a high initial income, not because of the inherent productivity of the technology but because the soil fertility is being mined. With continuous mining, yield and income decrease even with increasing synthetic fertilizer use. The soil becomes powdery and is easily eroded, either by winds or heavy rains. In the USA, it has been estimated that there will be a 20 per cent reduction in output within the next few years because of the loss of topsoil due to excessive use of artificial fertilizer. The quality of the crops is also affected by the fertilizers used. In Russia, no one likes to buy big watermelons because synthetic fertilizer makes them bitter. As long ago as 1944, E.B. Balfour, in *The Living Soil* pointed out that general health suffers when people consume food grown only on artificials.

It is worse if the harvest is exported from the country. The lost fertility, equivalent to the export of topsoil, represents a loss in the natural resource capital of the land. If exports continue on a massive scale, the productivity of the whole country must decline. The money value of commodities expresses only part of their worth; the most precious part being suppressed in conventional economic accounting systems.

Some oil cakes, of groundnut, for instance, are exported to Europe in order to earn foreign exchange. Groundnut oil cake exports in 1987-88 were about 300,000 tonnes.

Once in Europe, the oil cakes are fed to cows and the milk is dried and sent back to us as 'aid.' The high milk productivity in Europe is due to such manipulations. The Netherlands requires animal feed from agricultural land of more than four times its total land area. On the other hand, if the price of the oil cakes was not determined by the world market, but was within the reach of local farmers, they could feed the cakes to their own cows. Then there would be no need to import milk.

It should be obvious to everyone that the earth can only produce a limited amount of biomass-wood, leaves, fruits, grains – from a given area. If we try to extract more than the land can yield, then the system must degenerate. The collapse of the Western system of development has been temporarily postponed by the squandering of our planet's non-renewable capital assets.

When they recognise that they live in a closed eco-system, people are extremely careful to use resources sustainably. It is only when cities and industrial society offer illusions that we can escape constraints on resources that we lurch into unsustainability. The maintenance of a dynamic equilibrium demands that, in a particular region, inputs and outputs balance. The inputs consist of energy from the sun, water from rain, streams or underground sources, carbon dioxide, oxygen and nitrogen from the atmosphere, organic and inorganic chemicals from the soil, and so on. Outputs are what is harvested or extracted from the region. If outputs exceed inputs, the region must degenerate.

Such an equilibrium requires the use of renewable resources only, which means solar energy, through plant resources or direct energy conversion. Mineral resources can be used provided the products are fully recyclable. This implies a great deal of self-reliance which reduces the need for exports from and imports to a particular region. There can be differing degrees of self-reliance: at the household level, at the village level, at the level of a cluster of villages, and so on up to the level of regions and countries. The preservation and reconstruction of traditional self-sufficient systems will go a long way to increasing sustainability.

The continuing encroachment of the Western development system is pushing to the margins of subsistence those very people whose sustainable practice could offer us such wise and hopeful instruction, if only we pause to watch and learn from them rather than compelling them into the destructive mould of development that has brought us to the edge of disaster. (From *Asking the Earth*, pp.143-146)

By Winin Pereira

Interview with Sultan Ismail

Sultan Ismail is Founder Director of Ecoscience Research Foundation. In this interview, as one of the most articulate defenders of the organic faith he explains the true problems caused by chemical fertilisers:

Claude Alvares: If nature wanted salts in such huge quantities in the soil, wouldn't it have put them there in the first place?

Dr Ismail: Nature is an excellent teacher. It provides nutrition and not medicine to plants. When a cow delivers a calf, the milk for the calf for several months is not produced and stored in the udder of the cow; however, the capacity to produce that quantity of milk for the calf is programmed in the mother. In the same way, mother earth is programmed to source nutrients and to nurse its babies (the plants) in a regulated way. That's why energy flows but nutrients are recycled. This recycling ability of the soil depends on the health of the soil. The health of the soil is a sum total of the flora and fauna as a soil biotic community that enables the resourcing of ingredients from litter and other organic biomass and preparing the nutrition for the plants.

CA: What is the impact of dumping so many quantities of artificial fertilizers into a living medium?

Dr Ismail: Most artificial fertilisers are added as salts. Salts can dehydrate the micro-environment. When we eat food with more salt… we immediately feel thirsty. So also when we add too much salt to the soil, the soil feels thirsty… this induces the use of plenty of water. The first impact of using too much of artificial chemical fertilisers is the use of plenty of water. Microorganisms cannot tolerate high quantities of salt and hence they die. It also takes much longer for them to multiply.

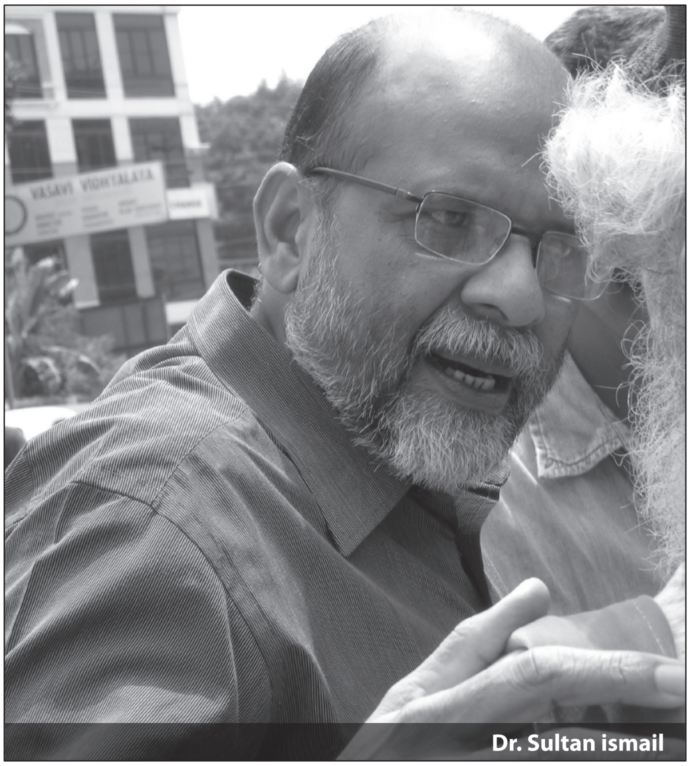
When I have a good tasty fish caught and I wish to take it home…. I do not have a freezer or even ice or a stove, what do I do? I apply salt and dry the fish in the sun… it is called 'dry-fish.' Why is it that the fish does not rot or stink… because the salt preserves it. What do I mean by it? Salt destroys the microorganisms and does not allow the microorganisms to multiply. Hence the fish is preserved and does not rot… so also when we apply so much of salt to our soils which we call mother earth, the soils become somewhat akin to 'dried fish.' The soils in many places are either going dry or becoming salty and sodic with excess application of chemical fertilisers and improper water management.

Then how do I keep my soil alive. Simple give it food and not medicine. The foods include a host of organic practices like compost (manure), mulch green manure, etc…

Soil fertility, as described by chemical farming is related to chemical fertilisers based on the physical and chemical parameters of the soil; however, in organic farming it is soil health. Yes, soil health is the sum total of the physical, chemical and biological parameters of the soil.

CA: Are organic manures and chemical fertilizers compatible, that is, can they be harmoniously used ever? Do they work as synergy or does one suppress the function of the other?

Dr Ismail: They should not be added together, as microorganisms that abound in organics cannot immediately stand the salt stress from the chemical fertilisers. We do not recommend addition of chemicals, but in case someone wishes to add organics to his chemical farm, then it is better they add the chemicals, leave some days and then add organic inputs.



Dr. Sultan ismail

CA: What do we mean by a living soil? What is a sterile soil?

Dr Ismail: We all know about the rich aroma of the soil (*mitti ki khushboo*). But does soil really have an aroma or a smell??? Absolutely not! Dry some soil in sun and smell the soil, there is no smell… You mean it smells when it rains? Well, well, does water have any smell? To be frank, neither soil nor water has any smell; it is the life in the soil that gives both smell. Especially the actinomycetes that live in the soil characterise that smell.

How do I know that my soil is rich? Ask the soil doctor for it. I mean the earthworm. If native earthworms are in the soil, we presume that the soil is healthy. The earthworm is the pulse of the soil, healthier the pulse, healthier the soil.

CA: Why are earthworms and termites good farmers? What is the total package of practices they bring to the soil?

Dr Ismail: Addition of salts through chemical fertilisers along with copious use of water leads to soil compaction. Using heavy machinery on this further compaction takes place on the already changing soil. Unfortunately no much emphasis has been given to soil air in modern agriculture. Soil air is an important component of the soil. Earthworms and termites burrow through the soil and enhance the soil air component of the soil. Naturally earthworms inhabit soils that are moist and termites the dry soils, especially the red laterites.

The space (pores) between soil particles is called the porosphere; and the burrows of the soil organisms (eg: earthworm) and their surrounding soil constitute the drilosphere. These regions favour multiplication of a large number of microbes comprising of bacteria, fungi, actinomycetes and protozoans. Also other flora and fauna do flourish here.

Pests: Are poisons the answer?

By Jose A. Lutzenberger

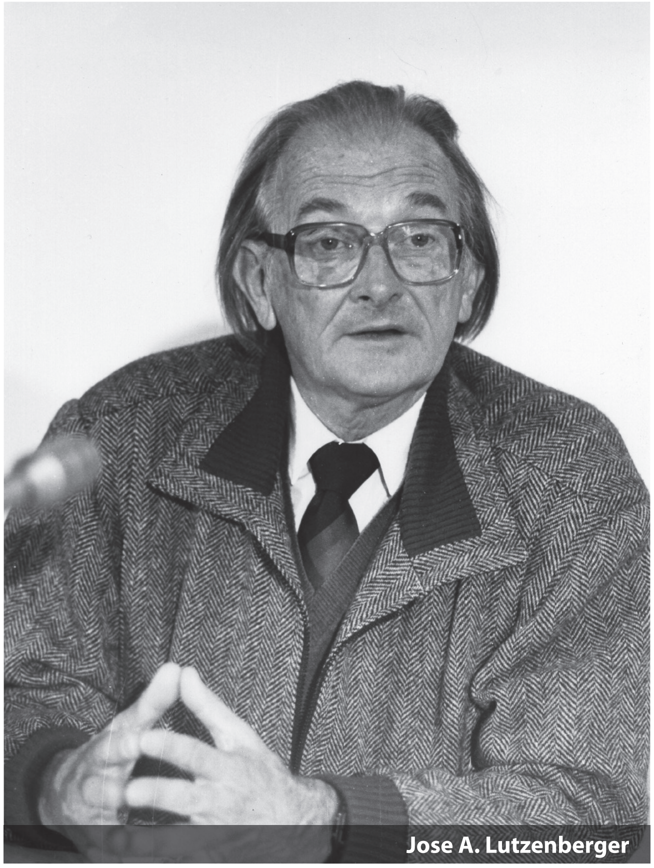
The working hypothesis, or paradigm, for the practice of conventional agriculture looks at the factors influencing production, such as soil, tillage and fertilizers, pests and pest control, weed competition or plant breeding and so on, in a purely analytical or reductionist way. Each factor is seen independently of all the others, as if it were in a closed box, or drawer, all by itself, with practically no connection between drawers. Within each drawer, reasoning is more or less linear, with few, if any, lateral branchings. When difficulties arise, only symptoms are treated.

In this view, in the *first drawer*, the soil is seen as not much more than a mechanical substrate allowing the plant to anchor itself, so as not to be swept away by the wind. The soil is also seen as a vehicle for mineral nutrients that are either water-soluble or that can easily be made soluble.

When soil is analysed for the purpose of determining the type and amount of fertilizer to apply to a given crop for maximum yield, the methods used in carrying out the analysis are given by this postulate. For instance, phosphorous is determined by leaching the soil sample with a mild acid and then analysing the leachate. So, the analysis may tell us that a given soil is poor in phosphorous when in fact it may be very rich, but the element is present in insoluble form that won't show in this type of analysis. Of course, this kind of policy is very good for those who want to sell the farmer expensive soluble phosphate fertilizers – superphosphate, triple superphosphate or even complex phosphates – when cheap raw ground phosphate rock would be quite adequate.

In the *second drawer* we find the pest, all those creatures that cause damage to our plants. They are seen as arbitrary enemies of our crops, they appear out of nowhere and they can destroy their host plants or cause serious damage whenever they find them.

In this view, it is enough for the right species of aphid to be present in a potato or tomato field and it should proliferate until all the plants are affected. If we do not stop them in time, they will continue their destructive work until our crop is lost. The same is true for the blight fungus, for nematodes, for spider mites or any other parasite. Pests are thus fundamentally wicked organisms. They should be eradicated if at all possible. While we do not succeed in exterminating them we must keep them away from our crops. If you are caught by American customs with an apple, orange or any living piece of plant or animal or even plant or animal food such as marmalade or sausage in your baggage it will be confiscated and destroyed. You will be punished, for you might just be introducing some new pest into the country.



Jose A. Lutzenberger

The easiest way to fight pests is by poisoning them. So, an arsenal of fulminating and/or persistent biocides is developed for deployment against them – pesticides, insecticides, miticides, nematicides, fungicides, bactericides, even rodenticides and moluskicides. They are sprayed over our crops in a uniform way, if possible by plane or helicopter. Now, even ultra light little planes are used. To make things easier for the farmer, the poison manufacturers work out 'spraying calendars.' All the farmer has to do is follow the calendar, spray the right formulation at the right time and he will catch all evil beasts. The poisons are really potent stuff. Even though you spray two hundred or four hundred litres per hectare, the active ingredient in the mix is usually only a few hundred grams, so that less than a hundredth of a gram per square meter will do the job.

Nowadays, with all the worry about ecology, the industry likes to promote what they call 'integrated pest control,' pretending to favour the use of only minimal amounts of poison and only at the right time, when pests are really present. But then, it is usually not the farmer who determines the presence of the pests, he is told by special warning services run by the agricultural authority. These warnings remind us of the announcements of enemy invasions in a war. In some crops, apples for instance, the farmer will spray up to thirty times in one season.

When the apples leave the orchard and enter the storehouse they are dipped in a bath of good strong fungicide, then, on a conveyor belt, they are dried and sprayed with wax. The fine wax cover will keep the fungicide in place. No fungus or bacteria will have a chance. The guy who designs the ad to induce people to buy those apples works in a *drawer of his own*. He never heard of pesticides toxicology – why should he? On the poster he shows a beautiful child eating a delicious looking apple, peel and all...

The weed is seen in *still another drawer*. Weeds are plants that should not exist. They compete with our crops, for water, for fertilizer, for space, and they may harbour pests. As long as we cannot put them on the list of extinct plants, we must fight them. Again, there are marvelous weapons ready to help us kill them – the weed killers, or herbicides, potent plant poisons, efficient and handy to use. Some will kill everything that is green, others, depending on how they are applied, are more 'selective,' they will kill some species while allowing others, our crop plants, to recover. Some are applied on naked soil to prevent weed seed from germinating, others kill grown plants on contact, either by killing off only those parts of the plant that they touch or penetrating into it to kill it all. The 'defoliants' used to destroy millions of hectares of jungle in Vietnam and which were also used in Amazonia are of the latter type.

In most of modern agriculture the aim is to always keep the soil under and between our crop rows as naked as possible. There was a time, until about the end of the fifties, when a wheat field in Europe was something very beautiful to look at – an orgy of colours. I will never forget all the purple poppies and all the multifarious companion plants in our fields. Then, even along the roads and on the edges of the fields, everything that flowers was sprayed away. A butterfly became a rare sight indeed. Environmentalists had to buy up pieces of land to give natural herbs – among them all those medicinal plants – a chance of survival. Fortunately, now, in the nineties, there is some recovery. In Germany one can even see tall grass on city lawns and road banks again.

Since, as we have seen in drawer one, the soil's function is to anchor the plants and convey soluble mineral nutrients to them, doesn't really matter whether or not it is inhabited by living beings – by earthworms, arthropods and other animals, especially springtails and protozoa, or by fungi, algae, bacteria. So we don't really have to worry about what our soluble fertilizers and all those downpours of poisons do to soil life. Since all those creatures are more of a bother than a discernible advantage, we might as well kill them off altogether. In most schools of agronomy, soil physics, soil chemistry, soil microbiology are taught separately and these disciplines see no connection, either with plant health or among each other. Phytopathology is another separate discipline. In most schools of agronomy, agricultural experiment stations and agricultural extension services, even today, 1995, humus is seen only as a physical soil conditioner.

In the sixties, while still in the chemical industry, I once received a technical paper from our research department recommending heptachlor, of all things, to eliminate earthworms! So well had most farmers been indoctrinated by then that I even received enquiries on how to kill off earthworms in orchards, 'ecologically,' without poisons... I also remember reading papers by important German agricultural authorities insisting that humus is totally irrelevant for tropical agriculture, that it can all be done with chemical fertilizers. In fact, the ideal of modern agriculture seems to be hydroponics, that is, growing crops in an inert substrate bathed in a solution of soluble nutrients. In fact, what we do with most of our crops today is not much different from hydroponics.

That is why, when we present a good compost or a mature biogas sludge to an agricultural lab, they give us a simple NPK-analysis. They don't even attempt to look into the extremely complex, and as yet mostly unknown, biochemistry of these *living fertilizers*, fertilizers that feed the life of the soil. As they find only a few percent or fraction of one percent each of nitrogen, phosphorous and potash, they decide the stuff is hardly worth the cost of transportation.

Once, talking to one of the sugar and alcohol barons in the North-East of Brazil, I asked:

—What do you with the slop from your alcohol distillation?

—I dump it in the river!

—But you're wasting a precious resource, apply it on your fields and stop polluting the river.

—How can I? Five hundred tons a hectare? Not practical. And I would have enough for only a small fraction of my plantation.

—But that's absurd! Ten to twenty tons a hectare is all you need and you have enough for all of your fields.

—My agronomist tells me five hundred tons.

I wondered. But then it occured to me that the young agronomist must have done what he learned in school. He figured that he wanted to apply more than one hundred kilograms of nitrogen per hectare and the analysis of his slop told him there was less than one tenth of one percent of nitrogen in it. So he needed that enormous amount. Linear thinking! But ten to twenty tons per hectare is sufficient to stimulate soil life, it helps nitrogen fixing bacteria and other bacteria that make insoluble nutrients, especially trace elements, accessible to plants, it produces high yields and healthy crops. You save on commercial fertilizer and agripoisons.

The way modern agronomy measures soil fertility, by making simple elemental analysis for nitrogen, phosphorous and potassium, sometimes calcium, magnesium and the micronutrients, could be compared to a description – scientifically correct – of a Boeing 747 as so many tons of aluminium, titanium, steel, chromium, other metals, rubber, plastics, glass, etc., etc. But, give me the correct amount of these materials, it won't fly!

That's also why modern agronomy has not yet discovered or doesn't want to discover the value of mature biogas sludge. If we compare an elemental analysis of fresh, stinking sludge from intensive cattle or pig rearing with that of the same material after complete anaerobic digestion, we get about the same result. In both cases fractions of one percent of the main nutrients and less of the others. But, let's apply fresh, stinking cattle or pig sludge on a pasture. It will take a long time, up to more than a month, before a cow goes there to graze and it burns the grass. Now, apply mature biogas sludge, make a drawing on the grass, the cows will be grazing on the design. I've seen deer come out of the forest at night, concentrate where the biogas sludge had been sprayed. So we have two very different things there. But the conventional agronomical analysis shows the same result. What we need is not an elemental analysis but a biochemical one. What do we have there in terms of ammonia compounds, of nitrates, of aminoacids, peptides, polypeptides, proteins, enzymes, alkaloids, hormones, of humus complex and, in the case of the fresh stinking sludge, in terms of all those poisonous and malodorous substances such as mercaptans, hydrogen sulfide, indole, skatole, free ammonia, etc., and, what about the microflora that is totally different from one to the other?

Let's look at the *next drawer*. It's the one that contains plant breeding. New crop varieties are selected by geneticists for maximum efficiency, that is, for maximum yield. What really counts is so many more pounds per acre. Of course, it is also important to select for good looks. The apple or potato must look attractive on the supermarket shelf, taste being secondary to looks. On the experiment station, when geneticists do the selective breeding for the new varieties, from the very beginning they apply all the paraphernalia of chemical fertilizers and poisons, so we often don't know to what extent they are really more productive. The traditional peasant stock, from which they are derived never was treated that way.

There is also the aspect of resistance to pests – apparently a cross-link between this drawer and drawer two. But resistance to pests is seen only as genetically inherent to the variety itself. No attempt is made to see it in relation to the environment in which the plant will have to grow, except insofar as it means the environment of modern agriculture – dead soil, plenty of inputs from the chemical industry.

That is why many of the giant pesticide corporations are buying up seed companies and trying to monopolize gene banks. They want to control breeding in such a way as to promote only varieties that give maximum response to their chemical inputs, as well as cultivars that are resistant to the total herbicide of the respective company that owns the patent for the genetically engineered variety.

There are a few *more drawers*. But they are drawers modern agricultural workers hardly ever think it worthwhile looking into. Take the drawer ecology. Only insofar as environmentalists make too much fuss about all the dead birds and fish, will they think of choosing their poisons taking into account a certain selectivity in lethal effect, so as to kill pests without, apparently, killing other creatures. Under much pressure they will pretend to promote 'integrated pest control' as mentioned above. But it is easy to see that this is not in the interest of turnover, so it remains lip service. In the early eighties, in the State of Sao Paulo, the poison pushers convinced the ministry of agriculture that it had to apply a certain insecticide on all cotton fields, from the air, on the stubble, after harvest (!), to 'eradicate' the boll weevil. This was considered 'integrated pest control.' We had to go to court to stop the action. But the ministry had already bought the stuff, so no loss in business was involved for the poison brewers.

We might mention *one more drawer* – social justice. But this one should not really concern agronomy. After all, what are sociologists and political scientists for? No trespassing of other specialist's fields! Modern agriculture is still seen as the greatest boon to Mankind. In its accounting, it externalises its ecological and social costs. The hundreds of millions of peasants who were and continue to be uprooted worldwide are not considered in any balance sheet listing the costs of modern agriculture. Neither agronomists nor economists find it necessary to come up with this kind of accounting. Not to mention the indescribable ecological harm that modern agriculture has caused and continues to cause worldwide.

This, in essence, though somewhat oversimplified for easier understanding, is the way modern agriculture sees or does not see a relationship between pests or disease and agricultural practices.

The interesting thing about this paradigm is that, insofar as we follow it, we transform our farms in such a way as to make the paradigm come true. On most of our fields, soils have become dead mechanical substrates and pests do act as if they were arbitrary enemies.

A rapidly growing minority of farmers and workers in agriculture are beginning to see things from an altogether different perspective. They think not in reductionistic but in holistic terms. For them everything is connected to everything else. They cannot see an arbitrary enemy in the pest, neither do they care to exterminate it.

The very thought of creatures deserving of extermination is abhorrent to any true biologist. As any beginner in Ecology knows, a process as old as organic evolution, almost four billion years, cannot possibly produce organisms that are wrong, that should rather not exist.

If pests really are the way the chemical industry in its well printed colorful folders and TV-ads implicitly postulates them to be, there wouldn't be any life left on this planet. There probably is no species of plant that doesn't have its pests and pests are millions (some more than hundreds of millions) of years old. Every pest would have had ample time to meet and exterminate all its host and would then have died out itself. Life would have collapsed on Earth.

Traditional peasants with their ancestral wisdom knew or acted as if they knew that pests only strike plants that are not quite healthy. So they strove to keep their crops healthy through proper soil management, including fallow, composting crop residues and manures, planting green manures, crop rotation, companion planting and other practices. Modern ecological farmers, with today's scientific knowledge, can do much better. Only rarely do they have to fight pests directly. Then they can resort to mild treatments, such as rock powders, ashes, herbal extracts and preventive treatments that stimulate plant growth. Until the early fifties, when I studied agronomy, agricultural science was still almost entirely oriented in that direction. It was not the farmers who asked for the modern methods, they were imposed on them as the chemical industry managed to progressively control agricultural schools and colleges, as well as research and agricultural extension services.

A conventional agricultural expert confronted with an orange or peach tree covered with scales or aphids, or attacked by fungus disease, looks up and tries to identify the pest species. Then he chooses what he considers to be the best and cheapest poison to rid the tree of its attackers. The ecologically inclined expert, on the other hand, will look down. He will ask the farmer how he tilled his soil, whether he applied herbicides, what fertilizers were applied, what pesticides were sprayed. He will take up a slice of soil with a spade. The structure, or lack of structure and compactness he sees in the soil as well as the organisms, earthworms etc., he finds or does not find, the weeds he observes, all this will tell him very much about why pest attack occurred.

In more than sixty years of intensive observation of Nature – once, one of my superiors in the pesticide industry contemptuously called me a 'nature lover' – I made innumberable observations of this type. When I first wrote this, from my window I could observe a colony of large black, spiny caterpillars on a ficus tree in my backyard. They slept at the base of the trunk during daytime. At dusk, they formed an impressive caravan going up to feed. But they only devoured the leaves on the smaller branches that had ceased growing because the canopy overhead cut out sunlight. These branches die off anyway. It has been that way for many sessions. So there was a preference for one type of foliage on the same tree. A few years later the caterpillars disappeared altogether. But now the tree stands on a different kind of soil. When I moved into my deceased parents house twenty five years ago we had a conventional, well manicured garden. I then allowed it to go wild, no more sweeping of dead foliage, no elimination of 'weeds.' Now, it is a little jungle, under the carpet of dry leaves we have a good dark, open humus soil. But meantime the tree grew so large I decided to do some tree surgery. A large branch was cut back. The new sprouts on the stump are now attacked by thrips (a sap sucking small insect). The rest of the tree is clear. Small wonder, the sprouts cannot grow fast enough to handle all the sap they are offered. There was no corresponding pruning of the roots below. The new growth is metabolically unbalanced.

There is another tenet of conventional plant pharmacology that cannot, or cannot always, be true. When we fight a pest with poison, let's say scales on oranges with parathion, we often get an immediate proliferation of another pest, mites. Now we have to use a miticides on top of the insecticide. It is said that mites now proliferate because parathion, being a 'broad spectrum' insecticide, kills the natural enemies of the mites, leaving them to proliferate freely. It's the old 'arbitrary enemy' postulate again. If the pest is not kept in check, whether by poison or predators, it will strike. Even those who propose biological control often base their work on the same postulate as that of chemical warfare, they only want to substitute predators or non-poisonous treatments for the conventional poisons.

But proliferation of mites can also be triggered by modern carbamate fungicides or by systemic insecticides or herbicides. This rules out elimination of predators. Modern fungicides also often seem to promote exactly those fungi that they are supposed to keep away. In our vineyards, when growers gave up the old fashioned, cheap copper and sulphur fungicides in favour of modern, expensive carbamates, they soon found themselves in a situation where they have to spray up to 30 times in one season. The more they spray, the more fungus attack they get. As if the fungicides really made the vines palatable to fungi. Now they are going for new, more potent and still more expensive stuff. They will certainly be in more serious trouble soon.

In organic farming and gardening it is common knowledge that pest attack has to do with the metabolic state of the plant. Susceptibility to pests, therefore, depends primarily on nutrition. Other factors, weed competition, positive or negative interactions with companion plants, allelopathy, climatic conditions, etc., also play a role. *Conditions for plant health must be optimised for pest attack to be minimised.* With proper soil management it is possible to have a pest free crop even though it be surrounded by fields of the same crop infested with pests. For demonstration purposes one can easily prepare two potted plants, let's say tomato or potato, in such a way that one of them will be easily attacked by aphids and blight, while the other one stays clean. When pest attack occurs on the plant in the unbalanced soil, one can make foliage of the two plants touch. The pest will not move from the infested to the uninfested one. But it is then easy to make the healthy plant become susceptible. All one has to do is give it an oversupply of water-soluble nitrogen fertilizer, especially ammonia fertilizer.

What we did not know is what kind of metabolic processes are involved. It is often supposed that healthy plants produce their own defenses against pests, that they either take up from the soil or produce substances antagonistic to pests – their own pesticides, so to say – or that they have mechanical ways to defend themselves, with stronger cuticles, perhaps, or hairs. All these factors may be at work, but now we know there is a fundamental factor involved that overshadows all the others. We have an explanation that puts all the above observations into one consistent frame:

Francis Chaboussou with more than twenty years of work at INRA (Institut National de la Recherche Agronomique) put forward the Theory of Trophobiosis. In its most succinct expression, his theory says: *pests starve on healthy plants!*

Most pests lack the enzymes to break up proteins into their constituent amino acids. This is a necessary step when one organism feeds on another. Foreign protein cannot be used as such, as each organism has its specific proteins. Out of the amino acids obtained in proteolysis, new proteins are synthesised in proteosynthesis. It is like demolishing a house to make a different one from its bricks.

Chaboussou showed that pests, whether they be insects, mites, nematodes, protozoans, fungi, bacteria or even viruses, will only thrive on plants with a metabolic imbalance that leads to an abnormally high level of soluble nutrients in the cell, that is, of amino acids, nucleotides, sugars and minerals. In a healthy plant the level is low. A healthy plant is either in repose, hibernation or estivation, or it grows as fast as it can. When in repose, there are no free nutrients left in the cell, metabolism ceases. But when growing, the turnover of nutrients in the cell is fast, as soon as they appear they are used up in the building of new structures – proteins, DNA and RNA, cell walls, starches and fats and a lot more. Therefore the concentration of amino acids, sugars and mineral nutrients is very low, too low for pests that rely on them to prosper. The plant is not nutritious for them, hence not palatable. The pest avoids the plant. But when will a plant have an excessive level of amino acids? Either when proteosynthesis is somehow held back or production of amino acids is too high, or, as happens in old leaves from where nutrients are recycled to newer parts of the plant.

The futility of pesticides

S. R. Sundararaman is an extremely articulate farmer from Satyamangalam in Tamilnadu. He was introduced to me by S.N. Nagarajan. I stayed with Sundararaman for three whole days, followed his activities and ideas carefully, and enjoyed his company. Mrs Sundararaman makes the most delicious curd in the whole of south India. S.R. is one of the most methodical organic farmers in the country today.

— C.A.

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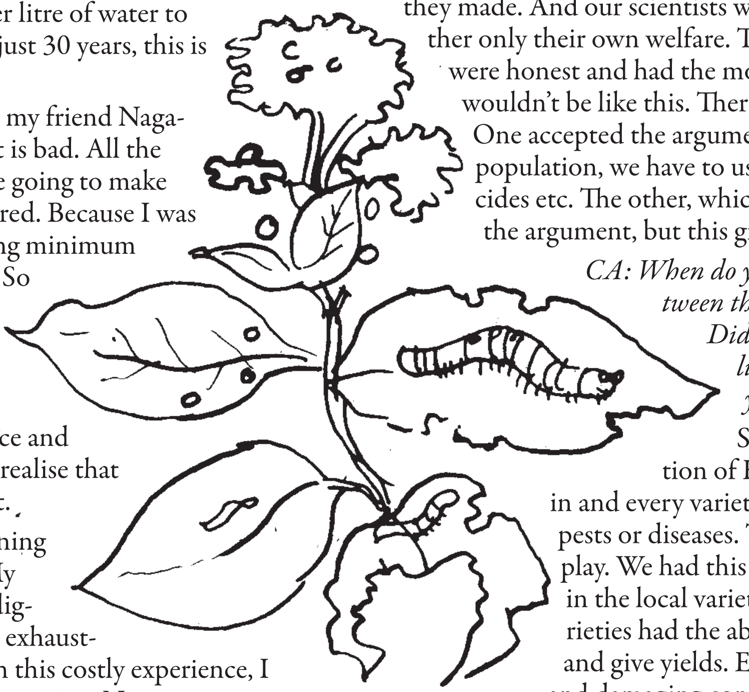
CA: You are aware of the discussions taking place on chemical methods of farming and the need to change from chemical methods as they damage the soil. When you began farming, what were your views on this?

SR: Let us take one chemical-Rogor. It is from the organophosphorous group. Its chemical name is Dimethoate (30 per cent). Almost everybody knows that this pesticide is said to control all sucking lacerating insects. In the initial stages, we used only 0.5 ml (of Rogor) per litre of water. 30 years later we had to use 4.0 ml per litre of water to control the same insects. In just 30 years, this is a drastic change.

From the beginning itself, my friend Nagaraj told me: ‘It is not good-it is bad. All the multinational companies are going to make money.’ But I was not bothered. Because I was getting good results - by using minimum spray I got very good yields. So how could I believe him? To believe him it took me twenty-three years. We are going the wrong way. With my own experience and observation, I have come to realise that what he was saying was right.



Or, take the case of deepening wells. It is against Nature. My three wells went dry in the digging process because we had exhausted the groundwater. So, with this costly experience, I realised that we were farming against Nature.

CA: Who do blame for this state of affairs?

SR: The scientists should have given us this background at the early stage itself! They hid the information, gave us all these chemicals and made fools of us. Now they are blaming us, the farmers. They say we are indiscriminately using these pesticides and fungicides. But who gave these dangerous chemicals to us? Did we find them on our own? By their ‘research work’ they discovered them, they packaged them, they suggested that we use them. If, at the beginning itself they had cautioned us to be careful, and told us not to use heavy doses, not to combine two chemicals, etc., things may have been different. It is not possible for a farmer to know these things. It is outside his knowledge. The scientists told us that if we used these chemicals we would have 100 percent control over pests.

CA: Was that true?

SR: No. I found that at best, you get only 80 per cent control. You cannot get rid of 100 per cent of the insects. At least 20 per cent survive with natural resistance. It is through this process of natural selection that resistance increases. Do you know that most insects have around six generations in a year? So, by the end of just one year, when the sixth generation comes along, it is much tougher. And in the course of one human generation-of 30 years-you have 180 generations of insects developing, with increasing resistance to pesticides. That is an aspect which the scientists have neglected.

CA: But surely Indian scientists must have known about pest resistance. This data was available in America because the farmers there have been using modern agricultural technology for many years. Here we began using pesticides only since 1965, at least 20 years later. During that time those American companies had already done research and they knew about the problem of insect resistance to pesticides.

SR: That is true, but the foreign companies gave us data based on their climatic conditions. Did we build up data for our climatic conditions? No.

We straightaway, blindly followed all the recommendations they made. And our scientists who went there wanted to further only their own welfare. They were not honest. If they were honest and had the motivation to serve society, it wouldn’t be like this. There are two groups of scientists. One accepted the argument that in order to feed the population, we have to use chemical fertilisers, pesticides etc. The other, which is a minority group, resisted the argument, but this group was ‘removed’, so to say.

CA: When do you think the imbalance between the pests and the plants started? Did it begin before the green revolution? Or is it related to high yielding varieties?

SR: It began after the introduction of HYVs. Various varieties came in and every variety was susceptible to particular pests or diseases. Thereby new factors came into play. We had this Helminthosporium disease in the local varieties earlier. But the local varieties had the ability to keep it under control and give yields. Even under severe climatic and damaging conditions, we would usually get 1,500 kilos (per acre) yield. It would affect the leaves only and it would not spread to the ears of grain. But after the introduction of HYVs, it started affecting the ears of grain and the quality of the grain was poor. Besides, since they came from foreign countries like the Philippines, they already had other diseases like cercospora leaf spot, bacterial leaf streak blight and sheath blight. These also came to our fields. But, as we didn’t know all this, we just sprayed the fungicides. In the beginning, we used two fungicides. One was copper-oxychloride, the other Dithane M45. Initially, these two provided normal control and we used about 250 to 300 grams per acre of one or the other. However, as the problem kept on increasing we started mixing both-50 per cent copper-oxychloride and 50 per cent Dithane M45 to get some results.

CA: On whose advice?

SR: The government people told us that copper-oxychloride and Dithane M45 sulphate are both contact fungicides. My brother who works for a company sent some technical people to explain things to me. They taught me that copper-oxychloride is a slow acting copper-based chemical, but its effect lasts longer; that Dithane M45 is quick acting, it immediately controls the disease, but won't last long; so, under severe conditions if we combined both, Dithane M45 would work for quick control but its action would quickly subside while the copper-oxychloride would remain and it would not allow the disease to spread. That was the advice they gave. And it worked. But, only for a short period. Then both become ineffective.

Then came the systemic fungicides. The first systemic fungicide was carbendazine, known by the brand name of Bavistin. My brother warned me not to use systemic fungicide frequently. 'Treat it as Naghastra,' he said. In the Puranas, Naghastra is a very powerful weapon, to be used only in drastic situations. 'Only if you can't establish control with copper-oxychloride and Dithane M45, should you use systemic fungicide. Because if resistance to systemic fungicide develops, then you will have no weapons left. So use it sparingly.' But the general public didn't know this. The manufacturers don't reveal these things.

CA: Because the company has to sell the product?

SR: Exactly. That is the motivation. So what happened was that the carbendazine slowly replaced copper-oxychloride and Dithane M45. Then liquid fungicides came into play. The blast disease started playing havoc.

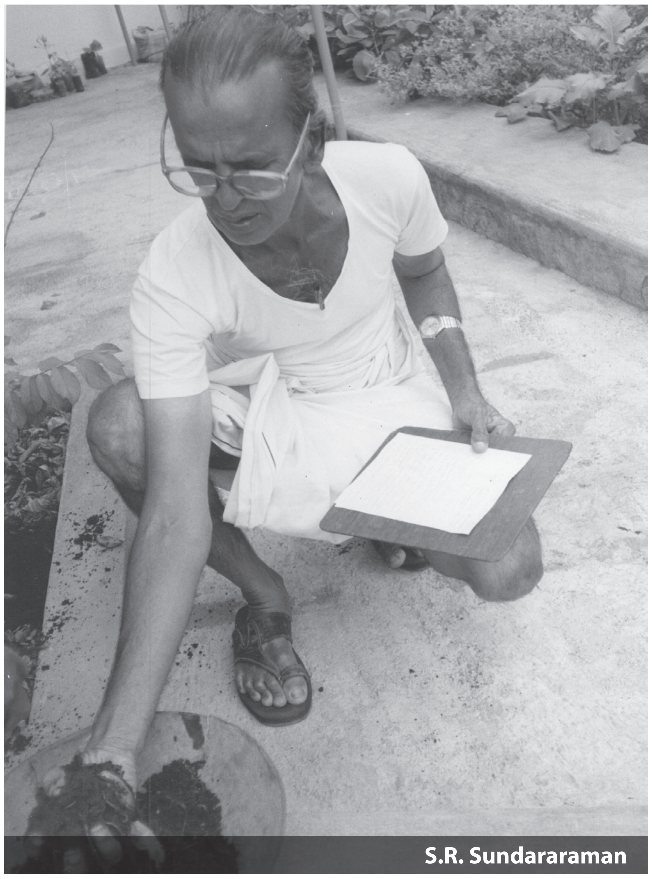
For this the Bayer company released one chemical called 'Hinosan'. It is organophosphoric. It's a very highly toxic chemical. If a worker sprays it for three to four hours, he will fall down and he has to be taken to the hospital. It is so bad. Similar was Kitazin, a systemic fungicide. But they all came to be freely used. We used all these chemicals to control the severe fungal diseases for six years. Then, all of a sudden these diseases disappeared. Vanished. Just like that.

CA: Most amazing. How do you explain that, for several years, Brown Plant Hopper (BPH) was such an endemic pest that they had to drown it in chemicals until even the taste of rice was gone, but then, suddenly, it just disappeared. The same thing happened with the fungal diseases. Where has the disease or pest gone?

SR: We have seen this happen with some locusts and other insects. Suddenly the population starts flourishing. It reaches a peak and, suddenly, they vanish. Once again, they suddenly come up. For every pest, there is an ideal condition during which it flourishes. When conditions then turn unfavourable, they vanish. This kind of thing is not uncommon. It is a kind of cycle. So it means we are not entirely free from pest problems. We cannot solve this by using dangerous chemicals and pesticides.

CA: How were farmers dealing with such problems earlier?

SR: Some farmers followed the old system. When there is a colony of plants and you have a pest attack, you allow the attack to take its course, because the pest will take away all the weaker plants. The stronger plants will survive, they will not be affected. It is only in the case of these new varieties, where the genetic base is much reduced that all the plants get affected. That is one explanation. Another is, for example, if we have a buffet system and we have different types of food there, we take what we prefer, we select. If we are in a situation where we cannot get anything to eat, what will we do?



S.R. Sundararaman

CA: You are using a human argument. Insects are not capable of that.

SR: It is true in the case of the insects also. When there is no crop, the insects live on grass. Their population goes down to the lowest, but they survive in those severe conditions. When their favourite crop comes up again, they latch on to the crop and the population builds up again. Of course we have spoiled the balance of the predators. By using all these pesticides, we have reduced all their populations, but the population of pest predators has gone down to the lowest level. So it is an ideal situation for the pests to prosper. And they have already developed resistance to the existing pesticides. If, in one generation, the resistance increases a pinch, imagine by how much it would have increased in 180 generations! As their resistance increases the scientists will have to discover new pesticides.

CA: So there is no way out of this?

SR: No. No way out. But we can have a compromise. By using biological control and traditional products like neem seeds, neem oil, neem cake, ash and turmeric powder, we can try to reduce the level of these pests, not disturbing the predators.

Interview with Dr S.G. Kabra: Pesticides are damaging people

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Claude Alvares: Dr. S.G.Kabra, can you begin by telling us about your experience in medicine?

Dr. S.G. Kabra

Dr.S. G.Kabra: I work in a multi-disciplinary hospital and I look after their Hospice and Perinatal Care Centre. I also work at the Indian Institute of Health Management Research as a faculty member. Most students are of diploma courses there. These are the two places where I work formally. I am a medical activist and legal advisor. Those are my fields of work.

CA: How did you get involved in pesticides related research?

Dr.SGK: It is within my general line of interest involving health topics and this was one of the key areas which interested me.

CA: How long have you been working in this area?

Dr.SGK: You mean in the pesticides area. It is almost 10 years now.

CA: The question is – Why are these pesticides related impacts, like cancers, birth defects, etc. not so well known or acknowledged despite pesticides being in use now for 40 years.

Dr.SGK: Unfortunately in the health sector, there is neither any surveillance system nor any reporting. Hospitals do not report their statistics. Since there is no surveillance system, things don't get reported and nobody becomes aware of them. For instance, the first study that we did was in the 1990s about congenital anomalies. When we reinvestigated it, the interest in such research started. They are not recorded and reported cases. That is how the general state is.

CA: Where did the research begin to establish such a connection with pesticides and how?

Dr.SGK: In the 1990s, we had for the first time conducted a study along with students and had the data from the "Labour Room" of the maternity ward analysed. Quite a faithful data bank was maintained. At that time, I was working as a professor in a medical college which has two hospitals for women attached to it. So I got the data from the maternity Labour Room analysed and found congenital anomalies especially the gross congenital anomalies that are recorded. The main gross defects that were recorded were the neural tube defects and among these, it was essentially the brainlessness defect, what we call anencepahaly. It means children are born without brains, i.e. the brains were not formed. The incidence of this was pretty high. When the entire data base was analysed, we found that there were two seasonal peaks, which was quite unusual. We calculated the dates backwards. The brain is formed in the first six weeks of pregnancy or early pregnancy. So any environmental factors that would affect this should be operative in that period. It was surprising that such factors should have a seasonal peak. It was calculated backwards to the month of conception and it was revealing that these coincided with two major crops that come into the market. It is a well known fact that these two major crops contained quite a substantial amount of residual pesticides.

CA: So what you are saying is that these women ate food which contained pesticide residues in those particular months.

Dr.SGK: That is right. These are congenital anomalies – children who were conceived during those months of crop peak showed greater incidence of brainlessness.

CA: This is almost similar to the endocrine disrupters.

Dr.SGK: Endocrine disrupters are worse because they operate at an embryo-toxic level (i.e. they are poison to the child) and also at the cyto-toxic (poison to the cells) level. Endocrine disrupters operate through the glands secreting hormones into the blood stream. The effect would be greater in the adults, specially during the spermatogenesis (sperm production in adult males). Of course, the endocrine disrupters may be responsible for pro-congenital anomalies and the enhanced rate of spontaneous abortions.

CA: That is also because some of them are known pesticides.

Dr.SGK: Yes. A good number of known pesticides are endocrine disrupters. We know those pesticides. There are some which affect estrogen (i.e. the female hormone produced during ovulation) and those which affect the testosterone (i.e. the male hormone). There are different kinds of endocrine disrupters. There are others which are thyro-toxic which affect the thyroid glands.

CA: How would you compare the severity of pesticide-related impacts with those from radiation and tobacco use, for example?

Dr.SGK: Well, these are three main ones. Their comparison shows up their carcinogenicity i.e. their cancer-causing effects. These are three well-known ones: Those from tobacco use: We call them tobacco-related cancers. There may not be any specific cancer which is formed by tobacco per se but there are certain types of cancers which increase with tobacco-consumption, such as lung cancer. Similarly, there are radiation-related cancers. In our country, diagnostic X-rays are done without any safety measures. So there is tremendous amount of radiation exposure. Radiation exposure effects in two ways. It affects the male genitalia – the gonads. It acts as geno-toxic. It mutates the genes of the sperm cells and the consequence manifests as childhood leukemia. In our country childhood leukemia is fast rising. These are known as radiation-related cancers. There are also newly emerging ones, which have been identified recently as cancer registries are being maintained. There are a number of them which appear to be pesticide related cancers. There is a high incidence of esophageal (food tube at the throat) cancer, gall-bladder cancer and liver cancer which I would term differently as pesticide-related cancer. There is an increase in the incidence of these specific types of cancers and they are quite prevalent in certain geographical areas which have excessive use of pesticides.

CA: And they are only prevalent in those areas?

Dr.SGK: No, we cannot say that they are prevalent in these areas only. So far, the evidence we have found indicates that these are the cancers that are relatively more common in the people of these areas.

CA: In relation to these 2-3 different types of effects, would you describe the impacts of pesticides on thyroid-related disturbances.

Dr.SGK: Here in Rajasthan, we have the thyroid goitre, which is very common (the thyroid becomes highly enlarged) and thyroid cancers are also relatively high. A number of substances are toxic to the thyroid and they affect its functioning. One peculiar thing that is emerging is that 70-80 % of the thyroid tumours or thyroid cancers occur only in women. So there is a peculiar susceptibility of females to these thyroid tumours. There are environmental toxins that are affecting people. For instance, in the case of the brainless children, 70-80 % of these are female. So the female foetuses or girl children are more prone or more vulnerable. That is something peculiar. It is a well known fact that brainlessness and neural tube defect are because of folic acid deficiency. Why should folic acid deficiencies affect female children only?

Obviously they are more vulnerable to certain environmental factors? The usual presumption that foetuses of both sexes should be equally affected by the environment is fallacious. Why should folic acid deficiencies occur in Punjab and Haryana, where the nutritional status is much better than Rajasthan? Why should it occur over there? The conclusion is that there is something in the environment which neutralizes or antagonizes the effect of folic acid, what we call folic acid antagonists. A number of pesticides affect folic acid and this would lead to a larger incidence of neural tube defects.

CA: The reason why I am asking for a little bit of detail on the symptoms of these disturbances is because many of these interviews and information that are produced in the Organic Farming Sourcebook are read very closely by farmers and at least they should be able to identify them in their area and help in the reporting of these type of impacts. Describe the nature of the defects that you have found in newborn.

Dr.SGK: In new born children, the main defect is brainlessness or otherwise part of the spinal cord remains open. Then you have hydro encephalus or fluid accumulation in the brain and the head is very much enlarged. So the main defect is brainlessness. The other impact that should be looked up that is from the reproductive health of women. That is the worst impact. There are two susceptible populations, as we call it: one is the children and the other is the females (the reason being that developing and multiplying cells are more in them). In females, the worst effect is on menstrual cycles, they become irregular. The other things are high rate of spontaneous abortions and a very high rate of stillbirths. That is another thing that we noticed in the population, that there is a very high rate of stillbirths. That means that the pregnancy continues but towards the end of the pregnancy the child suddenly dies. The reproductive health impacts are the worst.

CA: In the study that was done by Greenpeace called "Arrested Development", the main findings there were in relation to development and performance. What does this signify?

Dr.SGK: Yes, development and performance. This signifies that exposure to pesticides retards or affects the developmental abilities of the brain i.e. the brain does not develop. The brain is formed and seems perfectly alright but the learning abilities that are there i.e. the cognitive and the motor learning abilities (what we call developmental milestones) are worst affected. The functioning component of the brain, not the structural component, is not allowed to function and develop properly.

CA: There is quite an extensive research done on this by Greenpeace and it has been well publicized as well. How much of this research, or rather, is there any official recognition of the scale of the problem?

Dr.SGK: In the early stages there were two studies, which were excellent and scientifically conducted - one was by Greenpeace and the other was by Postgraduate Institute of Medical Education and Research of Punjab. These made a great impact. But the pesticide lobby is a very powerful lobby and so the appreciation and awareness in the political system were not that much. But they have made the impact and it made them think at the administrative and political levels that pesticides, yes, have harmful effects.

CA: Has there been any attempt by the pesticide lobby to controvert this type of research?

Dr.SGK: Yes, they have tried all kinds of things. They hire people and try to controvert this. The usual way is by personalizing it - by accusing and threatening and that kind of thing. The pesticide lobby is very powerful.

CA: Yes, they are very powerful and considering that they own practically half the scientific community which is dealing with agriculture, it is not very difficult for them to achieve this either. The last question that I would like to ask you is do you think the evidence is serious enough to ban the use of pesticides completely, at least the ones that are implicated in these reports?

Dr.SGK: Sure. That is done elsewhere. At least all the highly toxic ones should be banned. But the unfortunate thing is that even those which were banned are still available. I mean the ban is not effective. But it is high time that the highly toxic pesticides are banned and their use is also regulated. It should be the duty of the State to ensure that if they are not banned altogether, i.e. they should be used in very safe measures, in minimum quantity, if at all.

CA: That is going to be very difficult because most of the people who prescribe the use of pesticides in combinations or cocktails are the pesticide dealers.

Dr.SGK: That's where the state comes into the picture. It has to see that it is the responsibility of those who are marketing. They are not supposed to market murder. If they are selling and earning out of it, they should be somehow compelled to see that it is used safely and that nobody is harmed by them.

So who's the greatest pest on earth?

When a dog is to be killed, it must first be given a bad name. This is one of the 'first principles' on which the conduct of Western civilisation and its agriculture appears to be based.

When the Europeans first invaded the living spaces of the newly 'discovered' Americas 500 years ago, they found to their dismay settled populations there. This triggered off a major exercise in badnaming: the peaceful inhabitants including the Arawaks and the Taino and later the American Indians of the North American plains were dubbed 'savages' and 'cannibals.' The exercise of demonising enabled the invaders to exterminate millions and thereafter seize their wealth and occupy their lands and niches.

Nature did not invent pests. Pests are insects that have been given a bad name. In nature, every living component of the ecosystem has rights, from human beings to insects to trees and grasses. But we in India as well have successfully imported the demonising exercise (or habit) into nature's kingdom as well. And this enables us to wage war on a scale that is meant to exterminate entire populations.

The same justification that helped the conquerors to eliminate American Indians holds here too: insects are trouble makers who stand between human beings and food and between agribusiness and profits. They are a nuisance in the human scheme of things.

Warfare is therefore endemic to every thing we do in agriculture. It is a mentality that we have imbibed with 500 years of spiritual slavery. It's the worst contribution that Europe has ever made to culture and agriculture. And as the future unfolds, scientists promise more prolific and much greater wars with the rest of creation.

So who's the greatest pest on earth?

Who created monocultures in crops by reducing diversity, thus enabling some insects to increase their populations at the expense of others because they found their niche food suddenly available in plenty?

Which fools recommended a strategy that was based on the killing off of beneficial insects like ladybugs and spiders so that locusts and brownplant hoppers would thrive and improve their resistance to toxic chemicals?

What brainless mind-set this which actively encouraged the destruction of the biological component of soils by indiscriminate addition of chemicals and drove the earthworm ("builder of civilisation") out of agricultural fields?

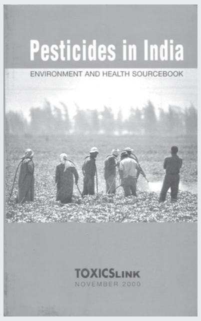
What kind of thinking is this which sees all grasses as weeds and constructs a multi-million dollar industry designed to kill unwanted vegetation in fields?

Which pest is this which encouraged the discharge of millions of tonnes of toxic synthetic pesticides, weedicides and fungicides into rivers and streams, killing trillions of billions of bees, butterflies, frogs and fish?

Who will rid the earth of this pest?

– C.A.

Pesticides in India



Pp.173
Rs. 150

A very good sourcebook and a mine of information on the status of pesticides in India and their environmental and health impact. Do not discuss pesticides in India without going through its pages. The information is very comprehensive and some of it, like the residues of pesticides in the food we eat, quite shocking and explosive.

Healthy Crops: A New Agricultural Revolution

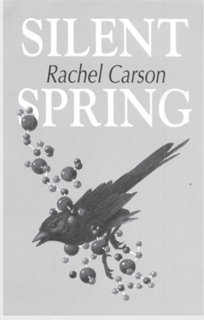
Healthy Crops
A New Agricultural Revolution
FRANCIS CHABOUSSOU

By Francis Chaboussou

Pp 234 (2005)

This work powerfully asserts the idea that rather than using pesticides, the key to helping crops resist attacks from pests is to improve their strength through natural processes. Many of industrial agriculture's fundamental principles for fighting disease, in particular the reliance on pesticides and fertilizers, are explained and convincingly challenged and a new set of guiding principles for an ecological agricultural system are presented as a genuine alternative to the widespread use of chemicals.

Silent Spring



By Rachel Carson

Pp. 258
Rs. 175
Available from OIB

One of the most influential books of the 20th century. Its publication led to a ban on the use of several chemicals like DDT in the USA and inspired the setting up of the Environment Protection Agency.

In her book (which has already gone into 30 editions), Carson painstakingly provided scientific documentation to prove that the use of toxic chemicals to kill insects – because they damage agricultural crops – was disturbing nature and its complex processes in ways little understood by human beings. Wild bird populations were succumbing to these poisons which were now to be found in the remotest regions of the earth and even in the breast milk of human beings. Chemical pesticides were eliminating benign insects, stimulating the evolution of more resistant pests and killing frogs, fish, bees and earthworms.

We normally associate 'revolutions' with Marxists and Leftists. However, in the field of agriculture, all revolutions are raised by reactionaries and generally the State (the representative of the most conservative forces in any society).

The Green Revolution, as we saw earlier, was funded and promoted by two of the most reactionary foundations the world has ever known in modern times: the Rockefeller and Ford Foundations. Now that it is showing increasing signs of unsustainability, new groups are coming up with another agricultural 'revolution', called the 'Gene Revolution.' This one is funded and promoted by Monsanto and a few other US corporations. Their board members, shareholders and supporters should all be locked up in some mental asylum or sequestered permanently at Guantano Bay. However, they are still running freely across the planet, creating such awesome mischief in agriculture, nature will never be the same.

Every time so-called modern technology expands, it gets deeper and deeper into everything. From occurring naturally in nature, *bacillus thuringiensis* (Bt) is now going to become ubiquitous, produced by millions of plants into whose genes it has been implanted.

The worst aspect of this scenario is the manner in which India's experts are bowing and pushing to allow this company and others to literally run amuck.

They have started Bt cotton seeds and now they seek to introduce Bt brinjal. This is one of the commonest vegetables we have in India, with no known problem of underproduction. Despite this, Monsanto and others are now pushing frantically to ensure that Bt brinjal also becomes a way of life in this country.

The government of India is a brainless monster which speaks in two tongues. It promotes organic farming for European consumers and says Bt brinjal and corn and other crops are good enough for the local folk. At some stage, one has to give way, either organic production or genetically altered agriculture. Organic farming does not tolerate or allow genetically modified seeds.

In a year or two, watch our export of organic produce collapse.

Chapter Four

Genetic Terrorism

Genetically modified (GM) crops and organic farming cannot mix

by Kavita Karuganti

Agri-technologies have the potential to impact not just human beings but living organisms in general, in addition to changing the composition of our natural resources like soil, air and water. They have a vast impact spatially, given that a majority of our land area is under farming. They also leave their impacts temporally even to the extent of scores of years and to the extent of impacting our future generations. Therefore, any agricultural technology that is being deployed on a large scale requires a careful and comprehensive assessment for its impacts. There should also be an understanding of its political economy (who is pushing it, for what reasons etc.) before it is blindly promoted as the only alternative – as is happening with transgenics at present.

While farmers have no control over markets as it is, they should note that there is tremendous rejection of genetically engineered (GE) crops/foods by consumers across the world. A majority of countries around the world today have not accepted GE crops/foods. Trade security will be seriously jeopardized and export potential lost if GM crops are allowed.

Talking about GM crops and organic agriculture, in a simple manner, one can say that current standards for 'certified organic' do not allow for genetically modified crops/foods to enter the organic food supply chain. In fact, in countries like the USA which do not have a system of segregating GM produce from non-GM, the only way consumers have a choice of having non-GM and of knowing what they are eating is to opt for certified organic.

There are a few important points to be noted about GM crops/foods and how they undermine the philosophy of organic farming, certified or non-certified.

- Genetic engineering rests on reductionist principles, ignoring the agro-ecological principles that form the basis of organic farming. The two commonly seen traits in GM crops are pest resistance and herbicide tolerance. In the case of pest resistance through genetic engineering (for instance, Bt crops), the situation has reached a stage where pests across crops are now being sought to be controlled through Bt gene insertion. This is monocropping at the gene level! The very approach of trying to kill pests through such technologies where a new toxin is produced inside the plant is going to put selection pressure on a whole population of pests – sooner or later, as with chemical pesticides, the target pest will develop resistance of course (development of 'super pests'). Similarly, in herbicide tolerant crops, weeds start developing resistance to herbicides ('super weeds'). On the other hand, organic farming understands that there exists a complex web of relations in nature and crop eco-systems and does not try to kill insects and weeds in such linear, reductionist ways.

- While many farmers across the world are switching over to organic farming after experiencing and understanding the adverse environmental, health, economic and socio-cultural impacts of chemical pesticides and fertilizers in our farming, permitting the release of GM seeds will not offer even that opportunity to farmers of re-tracing their steps back to sustainable farming. This is an irreversible technology since we are talking about seeds which have a life of their own – they have ways of self-propagation which makes the technology uncontrollable. That is why seeds of this technology are referred to as Genetically Modified Organisms (GMOs). This is intentional 'contamination' in perpetuity, which cannot be recalled once released into the environment. The potential impacts can even be evolutionary in magnitude but brought in at such a rapid pace that the planet's eco-systems would have really no time to adapt.The only way to ensure that this irreversible technology does not impact us with its various hazards is not to release GMOs into the environment in the first instance.

Kavita Karuganti: seasoned anti-GM campaigner

- Genetic Engineering, which is based on a simplistic understanding of how genes regulate themselves in an organism, has many shortcomings at the scientific as well as technological level. GE is a 'cut and paste' technology that is not based on the complex regulatory networks that are at operation at the molecular level. For instance, characters like stress tolerance that GM proponents talk about are driven by almost 50 genes. Genetic Engineering as a process introduces instability in the existing host genome and induces unpredictability because of this. These unpredictable results could have health or environmental impacts.

- Existing evidence clearly shows that transgenics are unsafe – several experimental studies and experiences with GM foods have shown that they cause stunted growth and development, allergies, impair immune system, damage vital organs like kidneys, liver, pancreas, can lead to reproductive health damage and can also have inter-generational effects.

- Further, in terms of environmental impacts, GM crops can lead to pest resistance, pest resurgence and serious disturbance in pest ecology, negative impacts on beneficial organisms and soil microbial activity, erosion of biological diversity etc. These environmental impacts are precisely what organic agriculture avoids when it rests itself on nature's principles – in GM, however, soils are not paid any attention to. In organics, much emphasis is laid on nature's web between pests and predators and to create a conducive atmosphere for natural balances to emerge. GM does not pay heed to this. In a sense, all the ecological principles that organic agriculture emphasizes upon are ignored by GM technology – worse, it upsets the existing balance.

- One of the major issues with GE crops is the genetic contamination that results from such crops – either the physical mixing-up of seeds and materials or biological contamination with the genetic characteristics of other crops getting changed. This will be a big issue for organic farmers – even if their neighbouring farmers opt for GM crops, the GM-free status of organic farmers could get affected. While in certified organic this will be unacceptable, even otherwise, this is a violation of a farmer's right to remain GM-Free. The only way this can be avoided, especially in a country like India where smallholdings are the norm, is to avoid any release of GMOs into the environment.

In addition to environmental and human health implications from GE, there are many socio-political implications to the country in general and the farming community in particular flowing from transgenic agriculture.

GE crops de-skill farming communities: As with other 'modern' agricultural technologies, it is clear that technologies like GE lead to de-skilling of farmers to the extent that farmers' environmental learning is eroded and their own knowledge of their eco-systems discounted. While seed-related decisions in farming should ideally be disconnected from money/market power and should be based on the local environment and resources that the farmer has to manage, the experience with Bt cotton in India shows that the aggressive marketing that this technology has witnessed does not enable the farmers to make prudent and wise decisions. Innovation will be stifled by the rapid nature of market-driven technologies and the pace at which they are imposed on farmers. Organic farming puts a great deal of emphasis on farmers' self reliance in terms of resources as well as knowledge. In many places, the philosophy extends to collectivization of efforts.

GE and Intellectual Property Rights (IPRs) go hand in hand: Corporate control over our food chain will be complete when technologies are combined with exclusive marketing rights in the form of Intellectual Property Rights. There is hardly any research taken up in GE without being accompanied by IPRs. This in reality means control over communities and nature in the same breath. However, technologies like GE would make farmers dependent on profit-seeking corporations who are only concerned about expanding and sustaining their markets. Local economies would be drained to fill the coffers of corporations, with ever increasing input costs for farmers (the technology is such that it will call for more and more inputs) and with output prices offering no guarantees at all.

There is a clear oligopoly situation emerging with around five seed companies in the world controlling almost all the IPRs related to genes and process technologies. Farmers are increasingly being criminalized for doing something as basic as saving seeds from their crops.

GE crops displace agricultural employment: Most GE crops in the world today are created to be herbicide-resistant. In India, (de-) weeding is the most important agricultural activity that fetches employment for millions of farming women across the country. If this activity is replaced by chemicals due to the introduction of herbicide-tolerant GE crops, these employment opportunities would be lost to the women. This would have tremendous adverse impact on their livelihoods and the local economies, in addition to causing other problems related to chemical contamination. Organics however looks at weeds as a precious and valuable resource. Weeds are used as uncultivated foods or as bio-mass for composting or mulching or fodder. Organic agriculture does not emphasise on cutting down on labour – it tries to create a win-win situation for farmers and agricultural workers.

GE in our food/farming also poses many ethical and moral questions. GE, by bringing in genes from animals into plants (fish genes into tomatoes, for example), also confuses the socio-cultural and personal preferences related to vegetarianism and so on. It leaves very little choices to farmers or consumers. Is meddling with nature to the extent of making unnatural genetic transfer, even across (species) kingdom barriers, acceptable, especially given the unknown nature of impacts? Should humankind be seeking control over nature in its pursuit of science & development, or should it take a cooperative approach? Does not GE violate inter-species and intergenerational equity principles by taking all the decision for the now and the present, for the assumed benefits to just human beings?

GM-Related Websites

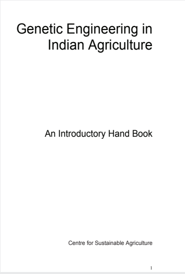
Websites for Information on GM issues

1. www.indiagminfo.org
2. www.gmwatch.org
3. www.biosafety-info.net
4. www.centerforfoodsafety.org
5. www.foei.org/en/campaigns/gmo
6. www.i-sis.org.uk/index.php
7. www.seedsofdeception.com/Public/Home/index.cfm
8. www.greenpeace.org
9. www.iamnolabrat.com
10. www.bangmfood.org

For official websites of Govt. of India:

1. www.envfor.nic.in/divisions/csurv/geac/geac_home.html
2. www.igmoris.nic.in/
3. http://dbtbiosafety.nic.in/

Genetic Engineering in Indian Agriculture


Genetic Engineering in Indian Agriculture
An Introductory Hand Book
Centre for Sustainable Agriculture

By Centre for Sustainable Agriculture

Download from:
www.csa-india.org

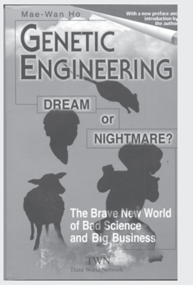
This 63 page booklet is specifically on genetically engineered crops and is designed to inform the consumer (of seeds, food) that such interventions in nature should not be tolerated.

Centre for Sustainable Agriculture (CSA) has been one of the principal organizations fighting the introduction of GMOs into India's agriculture.

The booklet begins by explaining what genetic engineering is. It then distinguishes normal breeding from genetic engineering. It effectively demolishes popular myths that GE crops lower use of chemicals (they don't), increase productivity (they don't) or have better nutrition (they don't).

Download the entire booklet from the CSA website: http://www.csa-india.org/

Genetic Engineering: Dream or Nightmare?


Mae-Wan Ho
GENETIC ENGINEERING
DREAM
or
NIGHTMARE?
The Brave New World of Bad Science and Big Business

By Mae-Wan Ho

Pp.316
Rs.150

Mae-Wan Ho is one of those global anti-GM activists that have succeeded in turning the dreams of GM corporations into a nightmare. This book is a major assault on the so-called science of the corporations. It vivisects the association of GM crops with the alleviation of hunger. It exposes the science behind genetic engineering biotechnology. It calls for a halt to commercialization of the technology and demands an independent public enquiry into the hazards associated with it.

The Case for a GM-Free Sustainable World

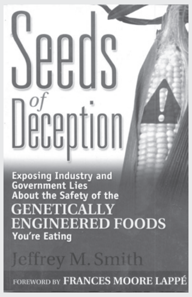
The Case For
A GM-Free Sustainable World
ISP
Independent Science Panel

Independent Science Panel

Pp.115 (2003)
Rs. 150
Available from OIB

The Independent Science Panel comprises a vast association of scientists from a bewildering number of disciplines. Here the Panel compiles a complete dossier of evidence on the known problems and hazards of GM crops.

Seeds of Deception


Seeds of Deception
Exposing Industry and Government Lies About the Safety of the GENETICALLY ENGINEERED FOODS You're Eating
Jeffrey M. Smith
FOREWORD BY FRANCES MOORE LAPPÉ

By Jeffrey M. Smith

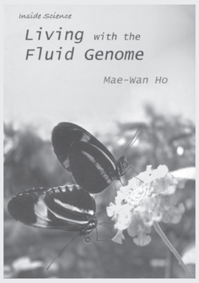
This is Jeffrey's Smith first book on the subject of genetically engineered seeds and foods.

The book is an important source of information for any person who wishes to know in simple language how mad scientists are tampering with what we eat and are in fact getting away with it all, despite protests by large sections of every population in every country.

Seeds of Deception will explain to you how really primitive the so-called skill of genetic engineering really is and why we are all better off without this latest tool of modern science.

The book is not available in India, but you should know of its existence anyway.

Living with the Fluid Genone

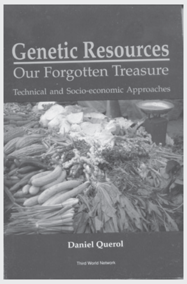

Inside Science
Living with the Fluid Genome
Mae-Wan Ho

By Mae-Wan Ho

Pp.197 (2003)
Rs.250
Available from OIB

An inside story of the fluid genome from a scientist who has been warning for over a decade that genetic engineering is both dangerous and futile. Mae-Wan Ho argues that the entire biotech enterprise – from GM crops to gene drugs and human cloning – is a phenomenal waste of public funding. The book contains a dossier of scientific evidence of the most serious GM hazards.

Genetic Resources: Our Forgotten Treasure


Genetic Resources
Our Forgotten Treasure
Technical and Socio-economic Approaches
Daniel Querol
Third World Network

By Daniel Querol

Pp.254 (1992)
Rs. 296
Available from OIB

This is an important book published by the Third World Network, Malaysia which provides technically competent knowledge about our genetic resources. Its added advantage is its author is a third world professor from Mexico who organised the native species genetic resource bank in Mexico. Querol discusses the issues relating to genetic resources in a format that is intelligible to lay persons. The book includes practical advice on genetic resource collection programmes and conservation, storage and regeneration of such materials. This is an important book for any person wanting to develop fundamentally sound competence in the issues relating to genetic resources.

Interview with P. V. SATHEESH

CA: You and your organization are identified as one of the key resistors to the introduction of GM and GE crops in the country. Could you give us some perspective on this issue?

PVS: India is opening up as one of the largest markets for GM or rather GE agriculture. I prefer to call it GE rather than GM because the word 'engineered' has far more power than the word 'modified'. America is looking at the whole of Asia today as one of the biggest agricultural markets. Europe has repeatedly refused to take on genetically engineered agriculture or food, even though their scientists are trained at Harvard. I think at the level of the consumers it is very unpopular and they can see that it will harm them. Monsanto has closed down its operations in Europe and shifted out.

That is why they are interested in Asia. In Asia these companies are looking first at non-food crops such as cotton and later they will go into food crops at a price. They want to bring food crops starting with vegetables like cauliflower, then mustard and finally rice and soya, of course. That will be a huge, huge market for biotech companies that are now making losses year after year. They have the 'Golden Rice' and Asia is the largest rice growing area. Bt cotton is the first entry into India by Monsanto. It was approved by Maharashtra, Karnataka and other southern states like Andhra Pradesh.

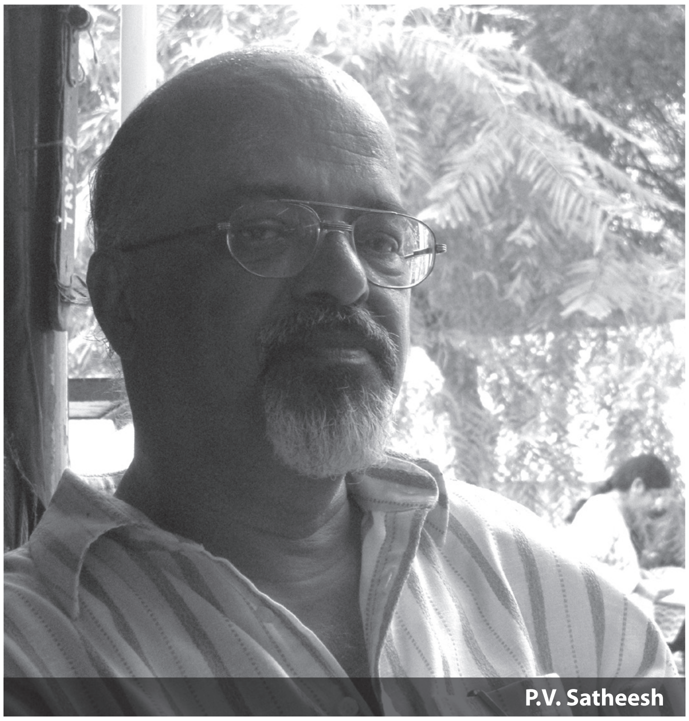
CA: Have the results justified the risks?

PVS: In Andhra Pradesh we have very closely studied Bt cotton from the time it arrived and have published three research papers on this subject. We have found that there are four promises made by the industry: One, it will reduce pesticide use significantly; two, it will reduce the cost of cultivation; three, it will give better yield and, four, higher income to the farmer.

However, on all fronts, the promises have fallen flat. The pesticide reduction is very marginal – something like 7,000 to 8,000 tonnes over conventional cotton. In terms of yield, in no year did Bt cotton have a yield significantly higher than non-Bt cotton. The difference has been only 1 or 2 percent in a good year, and in a bad year Bt cotton has produced about 30% less than non-Bt cotton. Cultivation costs have gone up for Bt cotton for all farmers, in all areas. Finally, in terms of net returns, Bt cotton has always been lower than conventional cotton. In two years out of three, Bt cotton farmers have had negative returns but non-Bt cotton farmers have always had positive returns.

CA: If it has failed on all counts, why is there still a craze for farmers to go in for it?

PVS: Cotton farmers are a very desperate lot. They are clutching at any kind of straw which tells them it will give a better yield. I have seen this phenomenon repeatedly. Let me give you an example. A farmer in Warangal district who grew Bt cotton said she had burnt her fingers. She said, 'I have lost everything and I will never plant Bt cotton again.' Next year we went to her field and found that one part still had Bt cotton. We asked her, 'Why have you grown Bt cotton once again?' She said: 'I cried and cried. I did not want to grow Bt cotton but my son forced me to do it. His argument was that the whole village was growing Bt cotton and if I don't grow Bt cotton people would think that I am not a modern person.'


P.V. Satheesh

So this is one kind of pressure which is all the time operating on the farmer.

The other point that small and marginal farmers make is that for them everything has to be available on credit, whether it is seeds, fertilizers or pesticides. And there is one source for seeds or fertilizers or pesticides. So for these distributors, there is a huge market because Bt cotton seeds sell at Rs.1,500 a kilo whereas non-Bt cotton sells at Rs.400 a kilo. So even if they get 25% from all sales of Bt cotton, they get Rs.400 to 500 per kilo. Therefore they tell the farmers that they will give the seeds and fertilizers on credit, provided the farmer takes a packet of Bt cotton seeds as well. The farmers have no alternative but to take it. We have a film on this. It also records a couple of deaths of people who have been destroyed by Bt cotton.

CA: What are the negative effects of Bt cotton?

PVS: We have observed in our study that there is a very definite impact on the health of livestock. Goats that have eaten the flax from Bt cotton have died. We have recorded at least 50-60 animal deaths that took place and where the Veterinary Department was called in but they did nothing. We are continuing to study the situation.

There have been problems for human health also. In houses where Bt cotton has been stored, cases of asthma and other allergies are reported. These are recent findings and we want to focus more on this aspect over the next three years.

Another concern is soil health. Farmers who have grown Bt cotton report that the following crop, whether of chilies or other kinds of tubers, failed to come up. Chili is known to be prone to root rot and from this it is deduced that Bt cotton has affected the soil because in adjacent areas which did not have Bt cotton, the farmers have got a very good crop. Companies like Monsanto know the truth and they don't want this investigated so they say that this is all non-scientific nonsense.

CA: What is the truth in the claim that use of GE crops will bring down pesticide use? 60% of pesticide use in India is because *of pest problems faced by cotton. So has there there been a reduction in pesticide use?*

PVS: Around 50% of all agriculture in the US is genetically engineered. The United States Department of Agriculture has got 10-year data which reveals a very flat curve in terms of pesticides use. It hasn't come down at all. At the same time, world pesticide use has come down very significantly. Therefore the claim that the GE industry will bring down the use of pesticides is another empty promise.

CA: Have costs come down?

PVS: Studies in Canada and other places show that yields have gone up not just because of GE but for various other reasons. Correspondingly, however, the farmers' profits have come down drastically. For every increase in yield, you have to spend so much more. Even our own Bt cotton studies have shown that farmers who have got a better yield have spent 100% more than the other farmers. But that is never taken into account.

CA: Will small farmers survive with GE crops?

PVS: The biotech industry has been skillfully brainwashing people into believing that the small farmers are incapable of handling this technology and therefore there must be consolidation of farm-holdings so that the country gets better opportunities in agriculture. That is another way of eliminating the small farmers altogether.

CA: I hear that all precautions that need to be taken when one plants GE crops have been thrown to the winds. We have no system for monitoring or controlling or implementing any regulations in agriculture. Certainly not on the scale required.

PVS: The GSA approval states that every District Collector must have a Regulatory Committee to oversee whether the Bt seeds are completely separated from the cotton since the seeds are used for human edible oil and the cottonseed cake is used as food for the cattle. But this mandatory requirement is completely absent. Farmers mix Bt and non-Bt cotton when they bring it to the market to get a better price but they don't declare it and nobody is any the wiser. The Confederation of Indian Industry has said that the Genetic Engineering Approval Committee (GEAC) approval mechanism is out-dated, it is consumer-oriented and therefore we must have a soft tax label and not bother too much about environmental practices and clearances because commerce comes first.

In Indonesia, to stay rooted, Monsanto had to bribe a lot of Indonesian officials. This was recognized in the United States where Monsanto was fined US$ 2.5 million, though in Indonesia nothing of this sort happened. Such dominance cannot function in the regulatory process. It has no desire to even handle it. It is just an eyewash to say that we have a regulatory law and we will control GE crops.

CA: The newspapers are promoting GE crops in a big way. The Indian Express *ran a big campaign in favour of its introduction.*

PVS: Economic considerations have always been first. The pink press always writes whenever some regulatory aspect comes up or some approval has been withdrawn. Then the stories appear. But even people like Vijay Jawandia – who are the farmers' leaders –say that they do not see any illegalities and all that they see is that the royalty for Bt seeds has not been given to Monsanto.

CA: What is the situation in AP?

PVS: In Andhra Pradesh, the GEAC completely banned Monsanto Bt cotton for 3 years and Andhra Pradesh also banned Monsanto operations from Andhra Pradesh. However in Andhra Pradesh there are two local firms dealing in Bt – one is named *Rasi*, which is partly owned by Monsanto and the other is called *Baneesi* which means seed. Both companies pay Rs.1200 per acre as royalty to Monsanto, so they sell their seeds at Rs.1800, out of which they get only one third and two thirds go to Monsanto. So though Monsanto has been legally banned from Andhra Pradesh, it is working through these proxy companies by taking royalty from them. This is how they work.

CA: Have they been able to control GE agriculture in better organized countries like the U.S., U.K., etc.? Have they been able to include refugia in those countries?

PVS: Everywhere, refugia have been promoted. People like Monsanto have been saying 40% of the crop should be refugia. I am sure they are able to do that also. It is not a pro-environment effort. It is just to ensure that the pest doesn't get immune to GM seed. Therefore if there is sufficient refugia, the pest feeds on the refugia so it doesn't continuously feed on the GM and doesn't get the resistance. It is only to postpone the resistance of the pest to GM that they are talking about refugia. It has nothing to do with the environmental issue.

CA: Eventually, they are going to develop resistance. There is no other option.

PVS: Of course, they have already developed resistance. They are now introducing two genes and Bt2 is soon coming into the market. So with the extra genes that they introduce, costs will go up and the small, marginal farmers will not be able to buy it. That is good in one sense but there are several other kinds of illegal measures that small farmers will be forced to use, for example, bank loans. Banks will say that scientifically-approved seeds have to be used and Bt seeds are scientifically-approved seeds. So in a devious way the small farmers will be trapped.

CA: What is the link between all these developments and the amendments to the Seeds Act? The basic apprehension is that farmers will no longer be able to trade their own seeds. Is that in the statute to be amended?

PVS: We all respect and have reverence for farmers. We all believe that the farmers should save and stock seeds for exchange but at some point, farmers decide otherwise. Just because one is a farmer, it does not mean that the other laws do not apply to them when the farmer becomes a trader.

What we should strive for is the right of the farmer to save, store, plant and exchange seeds. The farmer should also be allowed to sell the seeds without any trade laws coming into effect. If a farmer wants to keep seeds for himself, there should be no problem. That's a fundamental right of the farmer.

CA: Yes, but if he wants to sell the seeds, should there be some restriction in terms of quality control, etc?

PVS: Control over the quality of seeds is questionable. Who defines quality and in whose hands will the control lie? These are serious concerns.

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Away with Bt Brinjal

The introduction of Bt brinjal is an assault on the sovereignty and ecological integrity of India.

Permitting companies like Monsanto to get into brinjal engineering means inviting them to get into the daily lives of millions of ordinary people in India without their consent.

Except for the Government of India and the Ministry of Environment's committees (like the GEAC), the rest of the public knows that we have an overproduction of brinjal and there is absolutely no shortage of the vegetable.

Every Indian in fact knows how to grow it in his/her backyard.

Unlike cotton, where the continuity of the fibre is important to spin the yarn and make thread for various applications including textiles, there is no great harm in a small puncture in the brinjal fruit by the insects that are also fond of this vegetable.

The American Boll-worm can cause havoc to cotton by boring into the cotton 'bolls' that yield cotton fiber but is of no consequence if it makes a small bore hole near the calyx or stalk end of the 'egg plant' or brinjal fruit.

In fact, agricultural scientists and extension workers select brinjal fruits with the tell-tale bore holes of the boll-worm on the safe assumption that the crop has not been sprayed with hazardous chemicals that are routinely used as insecticides under conventional farming practices.

Right now, the entire genetic engineering project is being manoevred, pushed and controlled by Monsanto and its agent companies exclusively for their profitable dreams. Why is the entire agriculture of this country being made available to an American corporation like this to mishandle and pollute.

Who will forgive those who without the necessary understanding or foresight allow this country's biological heritage be contaminated with GMOs?

Genetic Roulette

My first encounter with Jeffrey Smith was when I got a copy of *Seeds of Deception*. It blew my mind. It told me things about genetic engineering (GE) I had never really known before. We think of GE as something new, out of this world, great lab science and applied technology, the leading edge, frontier technology. That's why people do not look at it with the hostility they have for nuclear arms. This is sophisticated technology. Dealing with living plants. And we are so uncritical about accepting any technology, so long as someone sells it to us as modern and new.

But in *Seeds of Deception* it became very clear that there was mostly indiscriminate technique and little good science in GE and that the techniques were largely to suppress processes that have been built into life and its reproduction over millions of years of evolution.

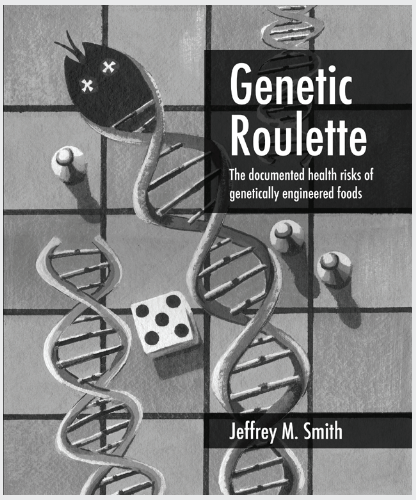
In the book, Jeffrey describes the process of actual gene splicing or insertion. Do you know that the insertion of genes into plant cells is actually done through an instrument called a gene gun? That the gun is like a blunderbuss, where the technician literally blasts millions of particles of tungsten or gold coated with gene sequences (called gene cassettes) into millions of plant cells. Only a few cells get hit and incorporate the gene. Where in the DNA they get fixed is a stroke of luck. Most cells die.

Why are we giving up millions of years of natural evolutionary processes for a procedure like this? Can it be upto any good? What is wrong with evolution that we should set about trying to upgrade it in this way?

I am glad that Jeffrey Smith has put some of that material into *Genetic Roulette* as well. It removes any aura around the technology.

We are at a critical stage of GM discussion in this country where the policy is being made at the instance of the corporation that is directly benefitting from the introduction of the techology, abettted by an agricultural research establishment that has been working with borrowed ideas and techniques ever since the introduction of the norin genes into Indian agriculture in 1966.

GE is being opposed by various experts, scientists and environmental organisations on various grounds. Even if one or two of those grounds were valid, both the procedure and product would normally be banned. One important group that is asking the Government to look afresh at GM promotion in this country is the Organic Farming Association of India (OFAI). The government on the one hand is promoting organic farming, primarily for export. On the other, that market stands to be killed if GM crops are introduced in various parts of the country. The government has not yet understood the fundamental contradiction between promoting GM and organic farming simultaneously. GM does not allow organic farming; in fact, it destroys the very possibility of organic farming.



Genetic Roulette
By Jeffrey M. Smith
Pp. 336 Rs. 475 Available from OIB

Chemical-based farming and all the technologies related with it, have reached a plateau. The only future now is using good scientific thinking to take forward refreshing new ideas that are coming in from the organic farming community. These have the promise of raising yields. GE does not raise yields, though for some reason it is being accepted because its supporters allege it is necessary to feed the growing population. Even the promoters and owners of GE technology have never claimed it raises yields. It only promises to prevent existing yields from going down due to weed or pest problems. Its major rationale is that it is a corporate technology designed to bring a corporation huge profits.

Even if we sweep aside the various scientific, environmental, ecological aspects of GM introduction, ultimately, we should be now concerned that we are now poised to eat the damn thing. This is what *Genetic Roulette* is primarily about: the already documented risk to our health from eating and working with GM crops, from cotton to brinjal. I was told just a year ago by an important anti GM activist that he too was not yet convinced that GM food was bad for health simply because there was just no data available.

Genetic Roulette does away with that crucial area of ignorance. Point by point, it provides scientific data (or whatever scientific data is available) to demonstrate beyond reasonable doubt that GM organisms can get into animal and human systems and how that can possibly impinge on our health.

The crucial test for now in India is the Bt Brinjal case. Brinjal is one of the most common vegetables of India. If Monsanto and the Indian system get away with the introduction of Bt brinjal, India will never be the same again. They know that once they get into brinjal, they will get into everything. The power of Monsanto lies in the fact that they can get GE not for crops for which there might conceivably be a reason, but for a common enough vegetable like *baingan*, which every Indian knows to grow. Which will grow even if we do not know how to grow it and for which there is really no need for such poorly tested techniques.

That is why this book has come at an opportune moment. Already, we have been harvesting foods contaminated with pesticides for years. But we can stop the use of pesticides. Unfortunately, with GMOs, once we get into it, it cannot be stopped or reversed. We cannot call back genetically modified organisms ever, like we have done with other technologies including nuclear testing. We can even get genies into bottles but not genetically modified genes that have got into the environment.

No one has the right to contaminate our biodiversity heritage like this. We hope this book will raise consciousness and help generate a rebellion all over the country so that this technology is kept out of our stomachs, out of our lives and out of nature in immediate years ahead.

In the section that follows, we present a brief, yet intimate history of the rise of the organic farming movement in India.

It is well recognised that one of the world's greatest pioneers of organic farming, Albert Howard, worked and wrote while in India. While at Indore, he invented the Indore method of composting, described in detail in his book, *An Agricultural Testament*. In the book, Howard remarks how he came to India to teach the farmers how to do agriculture and ended up learning agriculture from them!

Howard's work had a profound influence on Lady Eve Balfour, who wrote a major book on organic farming called *The Living Soil*. Lady Balfour eventually founded the Soil Association of Britain which is at the forefront of the organic movement in that country even today.

As the account that follows discloses, the movement to farm without chemicals and pesticides was – post-Howard – carried forward largely by civil society organisations, farmers' movements and dynamic individual organic farmers.

There was a time in the fifties when the Indian agricultural establishment did some solid work on a host of issues related to improvement of farming techniques, including seed selection, outside the framework of chemical inputs. However, once the so-called green revolution was dumped on this country, and uncritically accepted as gospel truth, the agricultural establishment became its greatest bulwark and supporter. Today we have an entire generation of agricultural scientists which sincerely believes that agriculture needs a constant infusion of chemicals, pesticides, growth hormones, GMOs, designer crops, etc. There is no light at the end of that tunnel, only farmers' suicides.

Hence the organic farming movement has continued to remain squarely with civil society groups. Government intervention to promote organic farming commences only this century. The reason for official agriculture recognising the need for organic farming was related more to the challenge posted by declining exports to advanced countries (rejected because of pesticide residues) than to any inherent belief in the science of organic farming.

Fortunately, that position has at last begun to change.

CHAPTER FIVE

India's Organic Farming Movement: A Short History

History of Organic Farming in India

The first formal civil society conference on organic farming was called by the Association for the Propagation of Indigenous Genetic Resources (APIGR) in October 1984. The meeting held in Wardha was attended by civil society leaders and activists like Vandana Shiva, Sailen Ghosh, the late Dr R.H. Richharia, Claude Alvares and several others who have remained steadfastly committed to the promotion of organic farming up to the present day. Korah Mathen, APIGR secretary, kept the flame of APIGR burning bright for several years, steadfastly calling meetings every year to discuss every aspect of organic farming and the utilization of indigenous biological resources.

Sailen Ghosh's inaugural speech on the occasion, meticulously worked out and of timeless value is in fact reprinted in this *Source Book*. The proceedings of the meeting were available in a booklet titled *Organic Farming* which for sometime now has been out of print.

Subsequently other major meetings on organic farming have been held and they were mostly towards the end of the 80s. These included the Bordi Conference in Maharashtra which was a focal point for the organic farming movement in that state.

A largely academic conference for North India was organised by the Rajasthan College of Agriculture in 1992. This conference, which was financed by the Department of Agriculture of the Government of Rajasthan, was mainly due to the initiative of M.L. Mehta who was the secretary for Agricultural Production and Policy Planning in the Government of Rajasthan. The promoters of this conference were also inspired by the practical work of Mr J.E. David of the Data Centre for Natural Resources, Bangalore. Many of the persons involved in organic farming even today attended the meeting including Kisan Mehta, J.E. David, Bhaskar Save, Ravindra Bhole, the late M.R. Bhiday and U. Bhawalker.

The proceedings of that conference are found in a bound volume titled *Proceedings of the National Seminar on Natural Farming*. The volume also contains reports of visits to organic farms in Gujarat and Maharashtra. It includes important scientific information from India and abroad on the practices and benefits of natural farming.

Two other major promoters of organic farming have been the United Planters Association of South India (UPASI) and ARISE.

UPASI organised two national level conferences on organic farming, the first in 1993 and the second in 1995. A detailed report of the first meeting is available from UPASI and so are the collected papers from the Second Convention. The main inspiration for organic farming within UPASI was Jacob Mani Mannotra who attempted, from within the organisation, to promote a variety of organic farming experiments on small farms in different parts of Kerala.

In April 1995, Bernard Declercq of Auroville (who has taught most of the important organic farmers of today) called another national level meeting of organic farmers.

About one hundred people – farmers, scientists, activists, and students – participated in the conference to resurrect the ancient Indian traditions of sustainability by sharing agricultural experiences in panel discussions and workshops.

They listened to Claude Bourguignon on the scientific relevance of farming organically in tropical countries and to Vandana Shiva and Korah Mathen on the importance of protecting biodiversity and the threats, to that end, posed by GATT (today, WTO). The participants also visited experimental projects on sustainable agriculture in Auroville.

'Agricultural Renewal in India for a Sustainable Environment' or ARISE was a concrete entity that emerged after the conference. It claimed continuity with the APIGR Wardha conference a decade earlier. Thereafter it would be the principal network for promoting organic farming within the country.

ARISE sought to work for a sustainable environment by protecting biodiversity and promoting organic agricultural practices. Auroville, the venue of the conference, is an international township in Tamil Nadu that draws its inspiration from the ideals of Sri Aurobindo and the Mother. In the 27 years since its inception, Auroville has gained recognition for its appropriate building technologies, alternative energy research, wasteland regeneration, afforestation and organic agricultural schemes. Its Gloria Farm has been run along organic lines since its inception.

As a result of ARISE several state level meetings were held.

The Tamil Nadu ARISE meeting was held in June '95 at the Karpaga Solai in Pudukkottai District. At the campus of the institution no ploughing has been done for several years. There are more than 110 varieties of trees and the owner of the ecological farm P. Thangasamy was able to provide organic food and major fruits like mango, jackfruit and bananas to all participants. People invited included those who could contribute towards the formation of the State level organisation. Discussions were held on the importance of natural way of living.

In September '95, the Kodaikanal organic farming organisation decided to associate with ARISE Tamil Nadu and active NGOs from Trichur and Pudukkottai District formed a soil association.

An ARISE workshop was even conducted in Ladakh with the assistance of Tadue Caldus, a consultant in organic farming from Brazil.

In Karnataka, the first ARISE meeting was held in January '96. At this meeting participants decided that there was a need for basic guidelines for organic farming. Also discussed were issues of organic standards and marketing. Farmers present unanimously agreed to reject European standards and to develop their own standards.

ICRA was entrusted with the task of preparing organic standards and certification specific to Karnataka to be submitted to the Karnataka Rajya Savayava Besayagarara Sanghatane. This was the name of the organisation of organic farmers of Karnataka.

The ARISE II meeting was held at Sevagram, Wardha in February 1996. The agenda included reports of organic farming from the different states, ARISE coordination (report of the secretariat), discussion of principal problems related to organic farming, way forward and commitment to action, and future plans.

It was decided at this meeting that Auroville (with Bernard in charge) would continue to host the Secretariat at least for one more year. A small group of advisors were selected to support the Secretariat. This group included Joseph Keve, Korah Mathen, Sultan Ismail, Vandana Shiva, Dr Vijayalakshmi, Bharat Mansatta and G. Nammalvar. Though the advisory group would help formulate plans, the main priority would be identification of regional centres that would act as local centres of organic farming. The following principal institutions were identified for purposes of negotiations:

(i) Deccan Development Society – Andhra Pradesh.
(ii) Association of Organic Farmers – Kerala
(iii) Auroville
(iv) Service Centre – Calcutta
(v) Chetna Vikas – Maharashtra
(vi) Research Foundation for Science & Technology and Policy – Dehra Dun
(vii) Rachna – for Maharashtra and Rajasthan

Organic farming meetings and activities not linked with ARISE:

Maharashtra civil society organizations had several meetings on organic farming in the 1990s. The most important of these was held at Wai in 1996. The Wai meeting was a follow-up to the Bordi and ARISE meetings.

CAPART also organised a national level consultation on organic farming. The International Institute for Peace and Harmony with Nature also tried to organise a symposium on Natural Farming for Sustainable Agriculture at Pilani in October 1995. The Tamil Nadu Agricultural University, Madurai organised a national symposium on organic farming in October 1995. The abstracts from that symposium are available in a book called *National Symposium in Organic Farming. (*The reader is warned however that most of the abstracts in the book deal with experiments using chemicals and organic fertilizers combined.)

A major international conference on organic farming was organised by the University of Agricultural Sciences in Bangalore in October 1996.

A Vidarbha level conference of farmers on sustainable agriculture was held on December 14-16, 1996. There were 70 participants including farmers and NGOs. The conference was inaugurated by Dharampal, the late Indian historian of technology.

The Vidarbha conference ended with an action programme whose coordination was placed in the hands of Dr Tarak Kate and his organisation, Dharamitra, which would also provide the secretariat for the purpose.

Most of the ARISE initiatives eventually fell by the wayside. The central leadership of ARISE which had been registered as a national society with founding members from 7 different states, was unable to move forward due to several practical problems. The ARISE group however, did succeed in bringing out a booklet called the ARISE standards of organic farming. But the beginning of the new century saw a lull in the civil society initiative.

The Organic Farming Association of India (OFAI) is set up

Eventually a fresh initiative was started when several requests were made to the persons behind the *Organic Farming Sourcebook* to make one more attempt to bring people, particularly organic farmers, together under one umbrella. The *Sourcebook* staff decided this would not be a bad idea and accordingly letters were dispatched to several hundred people to gather for a meeting at ISI Bangalore in July 2002.

It was at this meeting that a collective decision was taken to register a formal association called OFAI. However, considering past experience, it was decided that at least 1½ years time would be given for formulating the aims and objects and by-laws of the society with concrete inputs from all the members. The participants at the meeting nominated representatives to an ad-hoc National Steering Committee (NSC) which later became the general body of the new association.

In 2006, after several discussions in the NSC, the bylaws were approved and the society was formally registered under the Societies Registration Act, 1860 at Goa.

Thereafter OFAI has functioned as a reasonably efficient organization with a central secretariat based in Goa.

The OFAI activities have been categorized into three specific areas thereafter:

a) Institutional building, including office and administration.

b) Association-related activities including meetings.

c) Outreach programmes for the extension of organic farming among special interest groups, especially small and marginal farmers and tribal communities.

The activities of OFAI are coordinated by the Central Secretariat based in Goa with organizations (NGOs) or associations in different states serving as ad hoc State Secretariats to carry forward the decisions taken by the National Steering Committee [NSC].

The Managing Committee meets periodically to review the progress and to plan or approve activities within the framework of OFAI policies.

OFAI has made its presence felt throughout India in a short period of time. The association is deemed a PGS Facilitating Council under the PGS Organic India Council (PGSOIC) for the purpose of recognizing Local Groups of small farmers and tribal communities who wish to participate in the Participatory Guarantee System [PGS] for 'organic' labelling of agricultural and naturally grown produce. Since March 2008, applications from all over India for registration of Local Groups under PGS are processed by the Central Secretariat of OFAI for all the Facilitating Councils on behalf of PGSOIC. This is no mean achievement for an organization that was formed in 2003 and has been formally registered only in 2006.

OFAI is also a member of the International Federation of Organic Agriculture Movements [IFOAM] and has participated as an equal partner in the FAO website on organic farming in India.

OFAI training schools are immensely popular and well-attended. The most recent workshops on microbials for organic farming have been conducted at Ernakulam, Trichy, Erode and Goa with Mr. N. Gopalkrishnan, Mr. Jayant Barve, Dr. K. Natrajan, and Mr. Mohan Tendulkar as the expert faculty.

OFAI's use of organic farmers for its training faculty has been instrumental in achieving recognition for the work of individual organic farmers and using their experience for the benefit of others in the process.

Publications have been given a fillip by the second edition of Dr. K. Natrajan's book on 'Panchagavya' being published by OFAI in April 2008.

The Living Field, the association's newsletter, is the only major source of information on organic farming in India in English today. The newsletter appears regularly and is sent free to all members. It also appears in Hindi under the name 'Sashya Shamala.'

OFAI State Secretariats

Various NGOs or organic farmers associations serve as ad hoc OFAI state secretariats. The most recent of the Secretariats, Kisan Vigyan Kendra or OFAI-Uttar Pradesh, set up in 2008, serves the interests of the Indo-Gangetic plains and has extended its outreach to the Himalayan states of Jammu & Kashmir, Uttarakhand and Arunachal Pradesh. (The efforts are coordinated by Dr. Bharatendu Prakash, who is also editor of *Sashya Shamala*.) This secretariat has now assumed responsibility as a North-India OFAI secretariat, with independent charge.

The farmers in the agrarian state of Punjab, which has been on the cutting edge of the high external input-based Green Revolution of the post-1967 era, are increasingly willing to consider organic farming since conventional farming practices are proving unsustainable. OFAI is in the process of strengthening its presence in this region with the help of Mr. Umendra Dutt of the Kheti Virasat Mission.

The OFAI Secretary has participated in several discussions on promotion of organic farming in Punjab and Haryana during two visits to Punjab exclusively for the purpose. The most recent meeting was presided over by the Chief Justice of the Punjab and Haryana High Court, who was a known critic of pesticides and their impact on human health.

The Maharashtra Organic Farmers' Federation [MOFF] serves as the State Secretariat in Maharashtra. OFAI has recently collaborated with MOFF and the Vikram Bokey Foundation [VBF] to set up the International Institute of Sustainable Agriculture [IISA] on a 25 acre plot of land in the lap of the Western Ghats at Ovale, near Pune. Work was initiated on 02 October, 2007, and the plan for the institute building to be erected at the site were discussed at the 9th NSC meeting on 15 January, 2008 at Pastapur, near Hyderabad.

Today, OFAI has a presence in Orissa, Bihar, Madhya Pradesh and Gujarat, though not on the same scale as in Maharashtra, Tamil Nadu, Kerala or Uttar Pradesh where it has Local Groups directly under it as a Facilitating Council or in Andhra Pradesh where it has strong links with the Facilitating Councils for PGS in that state, specially the Deccan Development Society.

The ninth meeting of the NSC was held on January 15, 2008 at Pastapur in Andhra Pradesh. Here the association approved participation of the association in the Executive Council of the International Institute for Sustainable Agriculture (IISA) that was inaugurated at Ovale, Pune, on October 2, 2007. It also endorsed the PGS certification scheme. The meeting decided to hold the bi-annual convention of organic farmers at Trichy on 18-19, October 2008, keeping as its theme the issue of organic seeds for organic farming.

Tamil Nadu today has the largest number of farmers as OFAI members. The Tamilnadu Organic Farmers Trust (TOFT), led by Ms. M. Revathi, served as the State Secretariat for Tamilnadu till an independent OFAI-TN office was set up in Coimbatore in 2009. Mr. N. Gopalkrishnan of the RADIO Trust organized a National workshop on organic farming in Trichy on 18 and 19 April, 2008. In less than two year's time after the Wardha biennial, Tamil Nadu proved its worth by organizing the second biennial OFAI Convention focussed on organic seeds. Subsequently, the NSC has met in Bhopal in July 2009. Highlight of the occasion was a meeting of the NSC with the Director of Agriculture, Madhya Pradesh Government and several other functionaries connected with agriculture. The first restaurant to serve organic food also opened with the blessings of the NSC the same evening. The Minister for Agriculture made a resounding speech in favour of organic farming and in favour of policies that protected India's agricultural traditions.

The NSC approved the format of the South Asia Conference on 'Outstanding Organic Agriculture Techniques' being organised by OFAI in association with Third World Network, the National Centre of Organic Farming, the Karnataka Organic Farming Mission and the University of Agricultural Sciences, GKVK, Bangalore. The conference is expected to have organic farmers from Sri Lanka, Bangladesh, Bhutan, Nepal, Ethiopia, China and Malaysia.

The above history considered, one serious limitation of the organic farming movement in India is to be noted.

It is important not to reduce the status of farming in India only to identified organic farmers, certified farms, civil society organizations, including APIGR, ARISE and OFAI. Most of the focus for official involvement in organic farming has been with those within the formal frameworks including membership of civil society organisations. If -- as P.V. Satheesh has argued -- we look at reality instead, we would find millions of farms run by peasants and tribals without the association of chemicals and pesticides. If these are all included in the organic farming figures, India would lead in organic food production. When that recognition comes, the organic farming movement will be said to have returned India to the best of its tried and tested agricultural traditions.

Claude Alvares

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Group discussions on the setting up of the Organic Farming Association at Indian Social Institute premises, Bangalore, July 2002.

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International Institute for Sustainable Agriculture (IISA)

Ground breaking ceremony for setting up of the International Institute of sustainable Agriculture, Ovale, Pune district.

It has become imperative to set up a major centre for sustainable agriculture in the country. Such an institute would not only help in the convergence of nationwide efforts to promote organic farming, it would ensure a permanent base for the national organic movement itself, ensuring that it remains focussed and strong.

At the international level there is far greater cohesion in the organic farming movement largely because of the pioneering role assumed by the International Federation of Organic Farming Movements (IFOAM).

Even at this level, however, there is still a very serious gap which exists for the supply of information on natural farming worldwide. No institution carries out such a function today.

At the moment, an international institute for sustainable agriculture which seriously services the organic farming growth needs of the continents of Africa, Asia and South America would be an exciting challenge. Such an institute could well become the nodal agency for dissemination of natural farming knowledge across these three continents, assisting cross-fertilization, exchange of ideas, exchange of experts, sharing of techniques. Hence the decision to set up IISA.

a) Research Centre

IISA will conduct research on organic farming. These research programmes will be directed by organic farmers, though data collected can be recorded by non-organic farmers including students recruited for the purpose for the research centre. Simple residential facilities will also be constructed for researchers so that they can stay on campus if required.

b) Training Centre

The institute will conduct regular training courses for farmers wishing to convert to organic agriculture, courses for upgrading knowledge for organic farmers themselves, training courses for training of trainers, awareness sessions for consumer groups, training of children from rural and urban schools for introduction of organic kitchen gardens, etc.

c) Records Office

As the institute may function as the permanent office of OFAI and of MOFF, copies of the records of both the associations will be maintained at the institute. In this manner, the institute will automatically be a repository for data relating to organic farmers and organic farms from all over the country.

d) Comprehensive Library

The institute will host a comprehensive library on all aspects of natural farming. The library will include, in addition to books, videos and CDs on ecologically friendly methods of farming. It will also host all technical reports on organic farming from the government and from all scientific institutions not just from India but from all over the world. Data already collected by established centres like the Centre for Education and Documentation, Mumbai will be copied and transferred to the centre.

The library will be kept open for the use of journalists, researchers, officials, organic farmers and others interested in the promotion of organic farming. The library will also host first person reports and booklets by organic farmers. Eventually, most of this information will be scanned and also made available on the internet. Thus, an internet-based library is also envisaged.

e) Lobbying office:

One of the major deficiencies of the present organic farming movement is the lack of a small lobbying cell to promote organic farming policies within government and other institutions. This task would be undertaken by IISA since it would have all the data required at its fingertips. Lobbying activity would include pursing acceptance by State Government of policy documents on organic farming, interaction with the Central Government on issues like GMOs, serious research into the suicide syndrome affecting farmers in certain states, financial credit for organic farmers when required, etc.

f) Certification Office for PGS:

The PGS certification is now underway in the country. The scheme needs to be administered from certain central points to be effective. It is proposed to invite the PGS Organic India Council to locate its records and data at Ovale.

g) National Response Centre on Organic Farming:

The institute will function as a one-stop information centre on all aspects of organic farming, providing information on telephone or internet to persons interested in organic farms, visiting organic farms, having programmes with organic farmers, projecting organic produce, organizing green markets, etc.

i) International Networking Office:

The institute will set up an office for networking organic farming activities on an international scale with the primary focus on promotion of organic farming activities in Asia and Africa. Individuals will be specially recruited for this purpose. Coordination and networking of organic farming activities at the level of these two continents is required and will also command support from international agencies.

Organic Farming Newsletters

The Living Field

THE LIVING FIELD

July 2009 Issue Nine (For private circulation)

Update on Participatory Guarantee Scheme [PGS]

The PGS Organic India Council decided on 01 June, 2009, to register itself as a separate legal person in the form of a "Society" under Societies Registration Act, 1860 in the state of Andhra Pradesh, for convenience. One representative of each of the ten different PGS Facilitation Councils in India present at the meeting would be its "Founder Members". These ten PGS-FCs present were IIRD, OFAI, Keystone Foundation, DDS, Chetana Vikas, CCD, Timbaktu Collective, Grassroots, Thanal and GREEN Foundation. The Executive Committee consisting of Joy Daniel, Miguel Braganza and Mathew John as President, Secretary and Treasurer were unanimously elected.

The PGSOIC decided that the EC members would decide who would represent it at the IFOAM Committee on PGS. Mathew John was designated to provide continuity as he was already a part of the IFOAM Task Force. Miguel Braganza would be the alternate member, if Mathew John was unable to attend the meetings. All members would be briefed on return from such meetings.

Institute for Integrated Rural Development (IIRD)-Aurangabad, Maharashtra; Organic Farming Association of India (OFAI)-Goa; Timbaktu Collective (TC)-Anantapur District, Andhra Pradesh; Deccan Development Society (DDS)-Medak District, Andhra Pradesh; Keystone Foundation-Nilgiri District, Tamil Nadu, Chetana Vikas (Alternative Agriculture Resource Centre)-Wardha, Maharashtra; Covenant Centre for Development (CCD)-Madurai, Tamilnadu, Thanal-Thiruvananthapuram, Kerala, Pan Himalayan Grassroots Development Foundation [PHGDF]-Ranikhet, Uttarakhand and GREEN Foundation-Bangalore, Karnataka are

Continued on pg. 2 col. 1...

Regional OFAI secretariat launched for North India

OFAI's North India coordinator Dr. Bharatendu Prakash addressing an organic farmers' workshop at Patna, Bihar. OFAI is now opening a small office in the State.

A Regional Secretariat has been set up earlier this year for the Organic Farming Association of India (OFAI) in North India as per the decisions taken at the fifth and sixth meetings of the Managing Committee of OFAI on 15 September and 19 October, 2008, both held at Tiruchirapalli-Tamil Nadu. Banda-UP based Dr. Bharatendu Prakash is the Director of the OFAI-North India Regional Secretariat.

Organic farming had long remained in the domain of the small farmers and tribal communities to the south of the Vindhya Hills Range: across the Deccan plateau, the Nilgiris, the Eastern and Western Ghats across Peninsular India. The states that led the organic agriculture movement from the front were Andhra Pradesh, Karnataka, Kerala, Maharashtra, Madhya Pradesh and Tamil Nadu (in alphabetical order). To the north, the movement had also started in Gujarat, Mizoram, Nagaland, Orissa, Punjab, Sikkim, Uttar Pradesh, Uttarkhand and West Bengal but not gained momentum. Some states have adopted organic farming policies while others have drawn up strategies to promote organic farming. Mizoram has enacted a law to declare itself an "Organic State". Only the state of Karnataka has a separate budget to promote organic farming to date.

OFAI set up a Regional Secretariat for North India in the last quarter of 2008 to take the process forward and to accelerate it. It has begun to show results.

Dr. Bharatendu Prakash has travelled to Rajasthan, Bihar, Madhya Pradesh and Uttarakhand between January and June, 2009, to establish State Organic Farming Associations and affiliate them to OFAI. (Reports on page 6). Mr. Umendra Dutt of Kheti Virasat Mission helped to extend the message of OFAI across Punjab, Haryana and Chandigarh and organized a workshop for farmers in conversion to organic agriculture from these states on 4 & 5 May, 2009, in association with the Central Secretariat of OFAI. An "Organic Bazar" and a farmers group has been established with DISHA in Kurseong-West Bengal while "Grassroots" or PHGDF is helping to mobilize organic farmers into PGS "Local Groups" in Uttarakhand. There is no turning back.

Madhya Pradesh farmers will meet OFAI during the Bhopal meeting of the NSC scheduled now for the end of July 2009.

10 & 11 September, 2009 : OFAI-TWN-UAS-NCOF South Asia Conference on "Outstanding Organic Agriculture Techniques at UAS Bangalore-Karnataka See Pg. 3, 4, and 5.

Organic Farming Association of India
OFAI
PGS CERTIFIED ORGANIC PRODUCE
This Farm is certified by PGSOIC in collaboration with OFAI & INFACT
INFACT

The newsletter of the Organic Farming Association of India. Comes out four times a year. Carries all the news on organic farming in the country and reports on Association activities. Includes interviews with organic farmers.

Shashya Shamala

The Hindi face of *The Living Field* and is the Hindi edition brought out for north India by the OFAI North India Regional Office.

Both newsletters are sent free to members of the association.

Satavic Farming

'Satavic Farming' is a free monthly e-mail newsletter for organic farmers, NGOs, agriculturists, intending organic farmers, organic gardeners, composters and organic enthusiasts. It is largely India-centric though relevant information from overseas is also included.

Each issue has a news roundup as well as information on organic farming techniques, new developments, campaigns, profiles of organic farmers, answers to readers queries, book reviews, internet links, information on updates and changes in satavic.org, news on our training programmes and schedules, organic events across India, and much more.

To subscribe send an email to newsletter@satavic.org with the following information:

Name, email address, organization / brief description of farm / interest in organic farming and location (city, country).

For more details visit www.satavic.org

Paddy (e-bulletin)

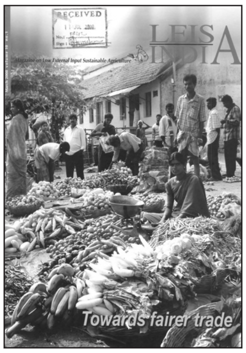
The Pesticide Action Network Asia and the Pacific (PAN AP), Malaysia, launched its 'Save our Rice Campaign' in 2003. This saw active participation of peoples' movements and NGOs across Asia to protect the culture and wisdom associated with rice cultivation. The endeavour has made substantial impact in terms of policy, networking, and information support.

In India, Living Farms, Orissa; Thanal, Kerala; Sahaja Samrudha , Karnataka; SEVA, West Bengal and CREATE, Tamilnadu have been involved in this campaign.

Since January 2009, the e-bullettin 'Paddy' covering varied aspects of the campaign is released from time to time. It is downloadable free from the Living Farms website:

www.living-farms.org/site/action/campaigns

Leisa India



Leisa India is published quarterly by AME Foundation in collaboration with ILEIA. The Indian edition is in English. Leisa India can be subscribed to free. For copies write to:

AME Foundation, No. 204, 100 Feet Ring Road, 3rd Phase, Banashankari 2nd Block, 3rd Stage, Bangalore - 560 085, Karnataka. Ph: 080 26699512/ 26699522, Fax: 080 2669 9410, Email: amebang@giasbg01.vsnl.net.in, Web: www.amefound.org

ILEIA is the Centre for Information on Low External Input and Sustainable Agriculture. ILEIA seeks to promote the adoption of LEISA through the LEISA magazines. Great site and organization for sustainable agriculture (www.leisa.info)

Honey Bee

C/o IIM, Vastrapur, Ahmedabad – 380 015, Gujarat. Ph.: 0272 407241, Tlx: 121 6351 IIMA IN, Fax: 0272 427896, Cable: INDINMAN, Email: anilg@iimahdernet.in

(Contact: Mr Anil K.Gupta)

Honey Bee is brought out by Sristi, an NGO engaged in education, research, policy, documentation related to farming. The newsletter reports on people's innovations. Sristi is also involved in documenting experiences in organic agriculture. It has a large database on indigenous innovations by farmers. Sristi also networks global research on the subject.

Sajiv Kheti (Hindi)

Quarterly Newsletter

All India Bio-Dynamic & Organic Farming Association

51, Swastik Nagar, M.O.G. Lines, Indore 452 009

Sajiv Kheti is a quarterly news letter of the association available at Rs. 5 per issue

Ore Bhoomi Ore Jeevan (Malayalam)

Edited by: T.V. Achutha Warrier

A Malayalam monthly on environment conservation, includes articles on sustainable agriculture.

Printed and published by K.V. Sivaprasad on behalf of 'One Earth One Life.'

Publisher: 'Swasraya' Mottammel Kannur – 670 331 For copies write to the above address.

Subscription rate is Rs. 75/- per year or Rs. 100/- for 16 months

Keraleeyam (Malayalam)

'Keraleeyam' is a Malayalam magazine promoting and popularising organic farming.

For subscriptions, please write to:

Municipal Market Building, Kokkalai,
Thrissur – 680 021, Keralam. Ph.: 0487 2421385
Email: keraleeyamter@rediffmail.com.

Gram Jatan (Gujarati)

Newsletter in Gujarati on organic farming brought out by Jatan Trust (editor: Kapil Shah). Provides a forum for discussions on organic farming in Gujarat. Write to: Jatan, Vinoba Ashram Gotri, Vadodara, Gujarat-390 021. Email: jatantrust@gmail.com

Adike Patrike (Kannada)

Farmers First Trust, Puttur - 574 201, Dakshina Kannada District, Karnataka
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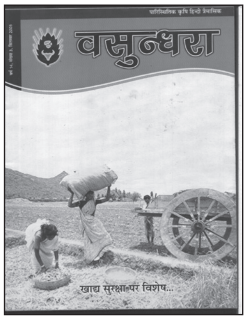
Language: Kannada
Annual Subscription: Rs. 175

The twenty year old monthly journal published by Farmers First Trust with a focus on organic farming, sustainable agriculture and rain water harvesting is a success story of self help journalism. Shree Padre, its executive editor has been relentless in his single minded dedication to promoting issues of sustainability. Apart from publishing in this journal, he has contributed hoards of feature articles to major dailies and magazines.

Vasundhara (Hindi)

Gorakhpur Environmental Action Group, Post Box No. 60. Gorakhpur-273 001, West Bengal. Ph.: 0551 2230004, Email: geag2@sancharnet.in, Web:geagindia.org



The quarterly Hindi journal in circulation for the past 18 years is dedicated to educating the farmer on latest trends in agriculture with emphasis on practices of sustainable agriculture.

People in Organic Farming

www.organic.com.au

An excellent site for notes on books and persons who were the first change-makers in the history of organic farming.

Baliraja (Marathi)

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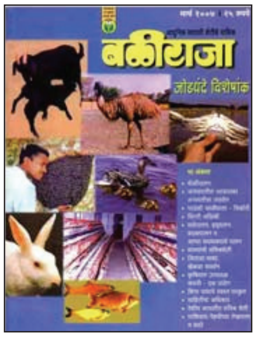


Baliraja is Maharashtra's most widely read monthly magazine reporting on agriculture with emphasis on sustainable practices. Its mandate is to meet all the agricultural information needs of the farmer - practices, research, trade, culture, trends, cropping patterns etc.

It also publishes agricultural calendars - Panchang; books and VCD's. Their film on Organic Farming won 2 National awards. It is the largest selling Agri-VCD, available in Marathi, Hindi, Gujarati and English.

Thaalaanmai (Tamil)

Address: Thaalaanmai,15/B Pioneer Colony, Tirumanglam, Madurai - 625706, Tamil Nadu Ph.: 09842048317 email: adisilmail©gmail.com Web: www.adisilnet.org (or) www.adisil.org

Subscription cost: Rs. 120 per year.

Content brief: organic farming techniques, green politics, book review etc.

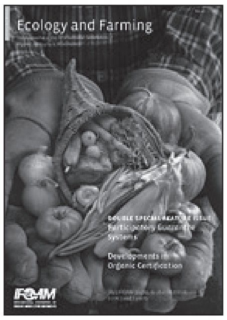
Thaalaaanmai, a magazine on organic farming is published by a farmer network.

Thaalaanmai has also published 14 booklets on various aspects of organic farming in Tamil. The booklets are priced low in order to make them affordable for small farmers.

Foreign Organic Farming Newsletters

Ecology & Farming

The magazine can be ordered online from http://shop.ifoam.org/bookstore



The magazine Ecology and Farming is published by IFOAM and covers developments of organic agriculture worldwide, including production, research, agropolitics, book reviews etc. Each issue has a special focus on organic agriculture.

Seedling

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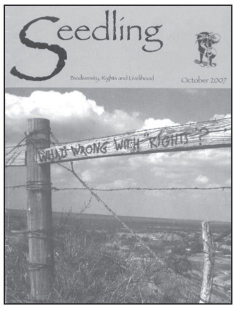


GRAIN is an international non-profit organization which promotes the sustainable management and use of agricultural biodiversity based on people's control over genetic resources and local knowledge.
Seedling is GRAIN's quarterly magazine. It provides background articles, news, interviews and much more on the issues GRAIN is working with.

Organic Farming: Potentials and Strategies

By Mangala Rai

It is indeed a matter of great pleasure for me to be here with you today in this holy city of Tirupati. I feel we are very fortunate to be here and I can say this based on my strong belief that unless HE wills it, no one can come here. I not only offer my humble prayers to Lord Balaji but also offer my respects to the people who live in Tirupati. I am grateful to the University for inviting me for the Millennium Guest Lecture and wish to share with you some of my thoughts on organic agriculture.

The Green revolution technologies involving greater use of synthetic agrochemicals such as fertilizers and pesticides with adoption of nutrient- responsive, high- yielding varieties of crops have boosted the production output per hectare in most of the cases. However, this increase in production has slowed down and in some cases there are indications of decline in growth of productivity and production. Priorities in agriculture research are gradually moving from a focus on individual crop performance to a total system productivity with due attention on product quality and environment safety. Environmental and health problems associated with agriculture have been increasingly well documented, but it is only recently that the scale of the costs have attracted the attention of planners and scientists.

In the words of Shri Bankim Chandra Chatterji, we have nature's bounties in form of

Vande Mataram!
Sujalam, suphalam, malayaja shitalam,
Shasyashyamalam, Mataram!

When translated it means

I bow to thee, Mother,
richly-watered, richly-fruited,
cool with the winds of the south,
dark with the crops of the harvests,
The Mother!

In the rapid pace of development we have inflicted serious damage to the natural resources and consequently we are now faced with questions as Where is that Sujalam (clean water)? Where is that Suphalam (healthy crop) and where is that malayaja shitalam (refreshing air)? These questions have given rise to a process of serious thinking to safeguard the environment and the quality of natural resources for sustainability. As a result more and more emphasis is being given towards returning to nature and adoption of organic agriculture.

The concept of organic agriculture

Organic farming is not new to Indian farming community. Several forms of organic farming are being successfully practiced in diverse climate, particularly in rainfed, tribal, mountains and hill areas of the country. Much of the forest produce of economic importance like herbs, medicinal plants, etc., by default come under this category. Among all farming systems, organic farming is gaining wide attention among farmers, entrepreneurs, policy makers and agricultural scientists for varied reasons such as it minimizes the dependence on chemical inputs (fertilizers; pesticides; herbicides and other agrochemicals) thus safeguards/improves quality of resources and environment, it is labour intensive and provides an opportunity to increase rural employment and achieve long term improvements in the quality of resource base.

Dr Mangala Rai:
Secretary, (DARE) & Director General, I.C.A.R. Krishi Bhawan, New Delhi.

Organic production systems are based on specific standards precisely formulated for food production and aim at achieving agro ecosystems, which are socially and ecologically sustainable. Many definitions have been proposed for organic agriculture with primary focus on ecological principles as the basis for crop production and animal husbandry.

Codex Alimentarius Commission, a joint body of FAO/WHO defines 'Organic Agriculture as a holistic food production management systems, which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system.' In its simplistic form organic agriculture may be defined as a kind of diversified agriculture wherein crops and livestock are managed through use of integrated technologies with preference to depend on resources available either at farm or locally. It emphasizes more on optimizing the yield potential of crops and livestock under given set of farming conditions rather than maximization. To promote organic agriculture and to ensure fair practices in international trade of organic food, the Codex Alimentarius Commission, also framed certain guidelines for the production, processing, labelling and marketing of organically produced foods.

The popularity of organic farming is gradually increasing and now organic agriculture is practised in almost all countries of the world, and its share of agricultural land and farms is growing. As per a recent report of International Federation of Organic Agriculture Movements (IFOAM) the total organically managed area is more than 24 million hectares world-wide organic farming is practised in approximately 130 countries of the world and the area under organic management is continually growing. Although production of organic crops is increasing across the globe, sales are concentrated in the industrialized parts of the world.

In addition, the area of certified wild harvested plants is at least a further 10.7 million hectares, according to various certification bodies. The market for organic products is growing, not only in Europe and North America but also in many other countries. The global market for organic food is expected to touch US$ 29 to 31 billions by 2005. The demand for organic food is steadily increasing both in developed and developing countries, with annual average growth rate of 20-25%.

Official interest in organic agriculture is emerging in many countries, shown by the fact that several countries have a fully implemented regulation on organic farming or are in the process of drafting regulations. The countries with the largest areas of organic farmland are: Australia, Argentina, Italy, Canada and USA. Some countries have reached a substantial proportion (close to or more than 10%) of organic land; these include Sweden, Austria, Switzerland, Finland and Italy.

There is a lot of debate between the proponents of organic farming and a section of the community who questioned the scientific validity and feasibility of organic farming. The most often debated issues on organic agriculture are :

a) Can organic farming produce enough food for everybody?

b) Is it possible to meet the nutrient requirements of crops entirely from organic sources?

c) Are there any significant environmental benefits of organic farming?

d) Is the food produced by organic farming superior in quality?

e) Is organic agriculture economically feasible?

f) Is it possible to manage pests and diseases in organic farming?

Impact of organic agriculture

In intensive farming systems, organic agriculture decreases yield; the range depends on the intensity of external input used before conversion. In the green revolution areas (irrigated lands and well endowed water regions), conversion to organic agriculture usually leads to almost identical yields. In traditional rain fed agriculture (with low external inputs), organic agriculture has shown the potentials to increase yields. A number of studies have shown that under drought conditions, crops in organic agriculture systems produce significantly and sustainably higher yields than comparable conventional agricultural crops, often out-yielding conventional crops by 7–90 per cent. Others have shown that organic systems have less long-term yield variability.

Organic agriculture and food security

Crop management practices such as crop rotations, green manuring, crops residue recycling, water management, efficient plant types etc., are adopted through a combination of structural and tactical management options to ensure farm produce of sufficient quantity and quality for livestock and human consumption. Normally, a crop rotation involving a leguminous crop is preferred over others. Organic farmer preferably grow locally adopted varieties having some quality traits for the premium markets.

The common understanding is that large scale conversion to organic agriculture would result in drastic reduction in world food supplies or large increases in conversion of undisturbed land to agriculture has not been borne out in modelling studies. Conversion studies showed that domestic food consumption would not suffer, exports would vary depending on crop, but the structure of farming would definitely change with more diversification of agriculture. Widespread conversion to organic agriculture would result in crop yield increase over the current averages as a result of increased investment in research and extension. Organic farmers grow a variety of crops and maintain livestock in order to optimize use of nutrients and the space between species. This ensures economic advantages through low crops production or yield failure due to biotic and abiotic factors in all of these simultaneously. This can have an important impact on local food security and resilience should an unwanted phenomena happens. In rain-fed systems, organic agriculture has demonstrated to out- perform conventional agricultural systems under environmental stress conditions. Under the right circumstances, the market returns from organic agriculture can potentially contribute to local food security by increasing family income.

Nutrient management in organic farming

Organic farming is often understood as a form of agriculture with use of only organic inputs for the supply of nutrients and management of pests and diseases. In fact, it is a specialized form of diversified agriculture, wherein problems of farming are managed using local resources alone. The term organic does not explicitly mean the type of inputs used; rather it refers to the concept of farm as an organism. Often, organic agriculture has been criticized on the grounds that with organic inputs alone, farm productivity and profitability might not be improved because the availability of organic sources is highly restricted. True organic resources availability is limited; but under conditions of soil constraints and climate vagaries, organic inputs use has proved more profitable compared to agrochemicals.

Nitrogen availability from organic resources often limits to realize full yield potential of cereals under organic production system. Under restricted water availability or rainfed conditions, the differences in crop yields between organic and conventional production narrow down to between 10-15%. FYM used in these experiments usually contains N, 0.5-0.8%, P, 0.2-0.4% and K, 0.8-1.0% with no mention of quality of organic matter/manure or alternative methods of efficient use. This nutrient rich manure helps to raise crop productivity even at lover application rates (5-10 t ha-1) compared to the use of 15-20 t/ha FYM with and without chemical fertilizer. In addition, use of liquid manures prepared through fermentation of green leafy materials, cattle urine and other locally available resources are common. The differences in quality of manures used is probably the reason for wide difference reported in crop yields under organic and conventional system of crop production. There is however a need to scientifically evaluate the nutrient supply methods in organic vs conventional systems. Their efficient use is an area of future research investigation.

Maintaining livestock at farms is an age old practice. Livestock play major role in organic agriculture as the intermediary between the utilization of crop residues or fodder produced at the farm and the return of nutrients as manure. Dairying in particular has helped number of small and marginal farmers to improve their income. Field survey revealed that marginal and small farmers, even in progressive states like Punjab, have helped to raise farm profitability as well as availability of cattle dung in sufficient amounts. Storage and application of their resources seldom attract proper attention of the farmers resulting in 40-60% losses in nutrients, especially N. Leaching of NO_3-N polluting the ground and surface water resources is usually observed from cattle dung pits. Organic farmers and farming methods take adequate care in minimizing these losses through adoption of technologies on composting, vermicomposting etc. This not only improve the nutrients availability from organic sources but also prevent potential hazard of ground water pollution. I would suggest to harness the power of micro-organisms in ameliorating such adversaries in soil.

Organic farming systems rely on the management of soil organic matter to enhance the chemical, biological and physical properties of the soil. One of the basic principles of soil fertility management in organic systems is that plant nutrition depends on 'biologically-derived nutrients' instead of using readily soluble forms of nutrients; less available forms of nutrients such as those in bulky organic materials are used. This requires release of nutrients to the plant via the activity of soil microbes and soil animals. Improved soil biological activity is also known to play a key role in suppressing weeds, pests and diseases. What is now required is to harmonize and bind the components in a system synergy and all round complimentarity.

Animal dung, crop residues, green manure, biofertilizers and bio-solids from agro-industries and food processing wastes are some of the potential sources of nutrients of organic farming. While animal dung has competitive uses as fuel, it is extensively used in the form of farmyard manure. Development of several compost production technologies like Vermicomposting, Microbe Mediated, Phospho composting, N-enriched Phospho composting, etc. improves the quality of composts through enrichment with nutrient-bearing minerals and other additives. These manures have the capacity to fulfil nutrient demand of crops adequately and promote the activity of beneficial macro-and micro-flora in the soil.

Presently, only 30% of total cultivable areas in the country has irrigation facilities where agrochemicals use is higher compared to rain-fed zones. It is here that ingenuity and efforts are required to increase crop productivity and farm production despite recurrence of environmental constraints of drought and waster scarcity. The basic requirement in organic farming is to increase input use efficiency at each step of the farm operations. This is achieved partly through reducing losses and adoption of new technologies for enrichment of nutrient content in manure. Technologies to enrich the nutrient supply potential from manure, including farmyard manure three to four times are being widely used in organic farms. According to a conservative estimate, around 600 to 700 million tonnes (mt) of agricultural waste is available in the country every year, but most of it is not used properly,. We must convert waste into wealth by converting this biomass into bio-energy, nutrients to starved soil and fuel to farmers. India produces about 1800 mt of animal dung per annum. Even if two thirds of the dung is used for biogas generation, it is expected to yield about 440 mt per year of manure , which is equivalent to 2.90 mt N, 2.75mt P_2O_5 and 1.89 mt K_2).

Organic farms and food production systems are quite distinct from conventional farms in terms of nutrient management strategies. Organic systems adopt management options with the primary aim to develop holistic farms, like a living organism with balanced growth, in both crops and livestock holding. Thus nutrient cycle is closed as far as possible. Only nutrients in the form of food are exported out of the farm. Burning of crop residue is prohibited, so also the unscientific storage of animal wastes and its application in the fields. It is, therefore, considered more environment friendly and sustainable than the conventional system. Farm conversion from high-input, chemical-based system to organic system is designed after undertaking a constraint analysis for the farm with the primary aim to take advantage of local conditions and their interactions with farm activities, climate, soil and environment, so as to achieve (as far as possible) closed nutrient cycles with less dependence on off-farm inputs. This implies that the only nutrients leaving the farm unit are those for human consumption. I would suggest to minimize the loss of nutrients, which otherwise continues without any let off.

Crop rotations and varieties are selected to suit local conditions having the potential to sufficiently balance the nitrogen demand of crops. Requirements for phosphorus, potash, sulphur and micronutrients are met with local, preferably renewable resources. Organic; agriculture is therefore, often termed as knowledge-based rather than input-based agriculture. Further more, organic farms aim to optimise the crop productivity under a given set of farm conditions. There are ample evidences to show that agrochemical-based, high input agriculture is not sustainable for long periods due to gradual decline in factor productivity, with adverse impact on soil health and quality. Harnessing the varietal potential by appropriate biotechnology input is neglected area and needs adequate attention.

The impact of organic agriculture on natural resources favours interactions within the agro-ecosystem that are vital for both agricultural production and nature conservation. Ecological services derived include soil forming and conditioning, soil stabilization through buffering and structural improvement, waste recycling, carbon sequestration, nutrient cycling, predation, pollination and habitats. The environmental costs of conventional agriculture are substantial, and the evidence for significant environmental amelioration via conversion to organic agriculture is over-whelming. There are also high pre-consumer human health costs to conventional agriculture, particularly, in the use of pesticides. It is estimated that 25 million agricultural workers in developing countries suffer from pesticide poisoning each year.

Safety and quality of organically produced food

There is a growing demand for organic foods driven primarily by the consumer's perceptions of the quality and safety of these foods and to the positive environmental impact of organic agriculture practices. It has been demonstrated that organically produced foods have lower levels of pesticides and medicinal and hormonal residues and in many cases lower nitrate contents. Nitrates are significant contaminants of foods, generally associated with intensive use of nitrogen fertilizers. Studies that compared nitrate contents of organic and conventional products found significantly higher nitrates in conventional products. Quality after storage has been reported to be better in organic produce relative to chemical based produce after comparative tests. 'Organic' in organic agriculture is a labelling term that denotes products that have been produced in accordance with certain predefined parameters and certified by a duly constituted certification agency or authority. The organic label is therefore a process claim rather than a product claim. Organic standard will not exempt producer and processors from compliance with general regularity requirements such as food safety regulation, pesticide registration, general food and nutrition labelling rules, etc.

Pest and disease management in organic farming

Pest control in organic farming begins by taking right decisions at right time, such as growing crops that are naturally resistant to diseases and pests, or choosing sowing times that prevent pest and disease outbreaks. Careful management in both time and space of planting not only prevents pests, but also increases population of natural predators that have natural capability to control insects, diseases and weeds. Other methods generally employed for the management of pests and diseases are: clean cultivation, improving soil health to resist soil pathogens and promote plant; growth; rotating crops; encouraging natural biological agents for control of diseases, insects and weeds; using physical barriers for protection from insects, birds and animals; modifying habitat to encourage pollinators and natural enemies of pests; and using semi-chemicals such as pheromone attractants and trap pests. I would emphasize to search for non-monetary inputs arising from natural resources for control of biotic stresses.

Organic farmers have long maintained that synthetic fertilizers and pesticides increase crop susceptibility to pests. Organic crops have been shown to be more tolerant as well as resistant to insect attack. Organic rice is reported to have thicker cell walls and lower levels of free amino acids than conventional rice. Plant susceptibility to insect herbivory has been shown in numerous studies to be associated with high plant N levels on account of high inputs of soluble N fertilizers. Organic N is available slowly as the plant grows it thus acts as a self-control against the disease.

Soil-borne root diseases are generally less severe on organic farms than conventional farms, while there have been no consistent differences in foliar diseases between the two systems. The successful control of root diseases in organic systems is likely to be related to the use of long and diverse crop rotations, crop mixtures and regular application of organic amendments. Increased levels of soil microbial activity leading to increased competition and antagonism in the rhizosphere, the presence of beneficial root-colonizing bacteria and increased levels of vesicular-arbuscular mycorrhizal colonization of roots have all been identified as contributing factors; in the control of root diseases. This is an unexplored area where native organisms provide protection against other harmful organisms.

Organic agriculture: Its relevance to Indian farming

Only 35% of India's total cultivable area is covered with fertilizers where irrigation facilities are available and in the remaining 65% of arable land, which is mainly rain-fed, negligible amount of fertilizers are being used. Farmers in these areas often use organic manure as a source of nutrients that are readily available either in their own farm or in their locality. The north-eastern region of India provides considerable scope and opportunity for organic farming due to least utilization of chemical inputs. It is estimated that 18 million hectare of such land is available in the North-East, which can be exploited for organic production. With the sizable acreage under naturally organic/default organic cultivation, India has tremendous potential to grow crops organically and emerge as a major supplier of organic products in the world's organic market. Need is for putting up a clear strategy on organic farming and its link with the markets.

The report of the Task Force on Organic Farming appointed by the Government of India also observed that in vast areas of the country, where limited amount of chemicals are used and have low productivity, could be exploited as potential areas for organic agriculture. Arresting the decline of soil organic matter is the most potent weapon in fighting against unabated soil degradation and imperilled sustainability of agriculture in tropical regions of India, particularly those under the influence of arid, semiarid and sub-humid climate. Application of organic manure is the only option to improve the soil organic carbon for sustenance of soil quality and future agricultural productivity. Future of sustainable development of agriculture, next to water, depends on arresting fall in organic matter in soils.

Economics of organic farming

The replacement of external inputs by farm-derived resources normally leads to a reduction in variable input costs under organic management. Expenditure on fertilizers and sprays is substantially lower than in conventional systems in almost all the cases. In a few cases, a higher input costs due to the purchase of compost and other organic manure have been reported. Studies have shown that the common organic agricultural combination of lower input costs and favourable price premiums can offset reduced yields and make organic farms equally or often more profitable than conventional farms. The economics of organic cotton cultivation over a period of six years indicated that there is a reduction in cost of cultivation and increased gross and net returns compared to conventional cotton cultivation in India.

The interest in organic agriculture in developing countries is growing because it places more reliance on the natural and human resources available, requires less financial input and provides safe food while conserving the environment. Studies to date seem to indicate that organic agriculture offers comparative advantage in areas with less rainfall and relatively low natural and soil fertility levels. Labour realizes a good return and this is important where paid labour is almost non-existent. Organic agriculture does not need costly investments in irrigation, energy and external inputs, but rather organic agricultural policies have the potential to improve local food security, especially in marginal areas.

Possibly, the greatest impact of organic agriculture is on the mindset of people. It uses traditional and indigenous farming knowledge, while introducing selected modern technologies to manage and enhance diversity, to incorporate biological principles and resources into farming systems, and to ecologically intensify agricultural production. Instead of being an obstacle to progress, traditions may become an integral part of it. By adopting organic agriculture, farmers are challenged to take on new knowledge and perspectives, and to innovate. This leads to an increased engagement in farming which can trigger greater opportunities for rural employment and economic upliftment. Thus through greater emphasis on use of local resources and self-reliance, conversion to organic agriculture definitely contributes to the empowerment of farmers and local communities.

Organic farming systems can deliver agronomic and environmental benefits both through structural changes and tactical management of farming systems. The benefits of organic farming are relevant both to developed nations (environmental protection, biodiversity enhancement, reduced energy use and CO_2 emission) and to developing countries like India (sustainable resource use, increased crop yields without over-reliance on costly external inputs, environment and biodiversity protection, etc.).

The government, private sector and producer associations each have a necessary role to play in promoting and facilitating marketing of organic produce. How the various pieces fit together in order to increase value and marketability of farmers' produce is a challenge and will require additional work to make the system function properly. Technical advice on how these processes function in other places and the roles of the different players would be very helpful. Under no circumstances food self sufficiency and security should be compromised in our genuine needs for organic farming. Having stated that I strongly urge to identify niche areas and crops for organic farming. With that full potential of organic farming can be harnessed and country's commitment on food and other economic activity can be sustained.

ICAR initiative on Jaivik Krishi Policy

The Director General of ICAR during his tenure has been pushing for the government adopting a policy on organic farming which could be implemented through the ICAR and associated institutions. Accordingly a brain storming session was held in Lucknow on February 2nd, 2006 at which the DG himself was present. The meeting was called to review the policy framework on organic farming in general and to incorporate the national policy to cover the domestic market.

The brain storming session minutes records the DG's declaration that the Project Directorate of Cropping Systems Research Institute at Modipuram should be converted into a research institute for organic farming in the 11th five year plan and that organic farming should be introduced in 500 KVKs, one in each district.

At the meeting, the DG agreed to constitute a committee to formulate a policy for organic agriculture, dovetailing it to the Codex Guidelines. The committee was set up and it included the following members:

Dr. T. P. Rajendran, ADG (PP), ICAR

Dr. O.P. Rupela, Principal Scientist, ICRISAT

Shri Subhash Mehta, Consultant, FAO, New Delhi

Dr. R.K. Pathak, Chief Consultant

Dr. Jose C. Samuel, Additional Commissioner (Hort.), DAC

Thereafter several meetings were held in different parts of India. The minutes of the February meeting together with the minutes of the Jaivik Seed workshop, Bangalore (December 05) and the April 8-9, 2006 Modipuram Seminar and SWOT analysis on organics together with the Participatory Guarantee System (PGS) and Producer Company (PC) documents, the output of the organic Workshop, Delhi, the work plan for implementation/conversion to organic, the Bhopal post-harvest meeting minutes, data on price harmonization of collected and cultivated, food security (FAO), high yields from Jaivik Krishi and the Codex Guidelines were used to write the draft policy on Jaivik Krishi.

We do not know the final status of the draft policy. However, some features of it need to be presented here as they are fully supportive of organic farming.

The draft Jaivik Krishi policy notes at the outset: 'Practising organic farming does not mean growing crops the way it was done before the green revolution and harvest low yields. Harnessing all biological resources as well as goods and services for crop production, instead of synthetic agrochemicals, and still harvest high yield was visualized in the nineties. After studying the organic farms existing in the dry-land regions of central India, it became clear that the country's food security shall not be at risk due to adoption of this farming technique. Internalization of resources as well as judiciously blending all natural resources within the broad outline of cropping systems that suits the farmers land and other resources was the basis of such practices. It did not ever cause the worry on the country's food security since the productivity with organic farming from a given area is comparable to conventional agriculture in rain-fed, semi-arid conditions, while improving soil health, as vouched by the experience of thousands of farmers practising organic farming in different regions of India. They also reported yields comparable to their neighbouring conventional farms.'

The policy recommended the term Jaivik Krishi as a good Indian equivalent of 'organic farming' especially in view of IPR pressures developing on this front.

The policy noted that research to support the policy on 'Jaivik Krishi' and development of mandate, criteria and procedures for the implementation of the policy will be important.

The draft policy was based on ‘Jaivik Krishi’ being a whole system approach to farming and food production, recognizing the close interrelationships between all parts of the production system from the soil to the consumer. It focused on the facilitation by the Ministry of Agriculture (MoA), and the State Governments.

The policy document adverted to the conference organized in March 2004 in Delhi, funded by ICAR, on organic farming which had concluded that ‘Organic farming is a silent revolution in the making and will be the next big boom for India after IT and BT.’

The policy document noted that the following principles would apply to ‘Jaivik Krishi’:

· the use of living organisms and on farm production methods shall be preferred to the use of synthetic materials;

· natural substances shall be used;

· GMOs and products produced from or by GMOs will not be used;

· rules of ‘Jaivik Krishi’ shall be adapted to local conditions, stages of development and specific husbandry practices, while maintaining the common concept of ‘Jaivik Krishi’.

· farming shall maintain and enhance soil fertility, prevent and combat soil erosion, and minimise pollution;

· farming shall aim at producing products of high quality and safety;

· the use of non-renewable resources and off-farm inputs shall be minimized;

· wastes and by-products of plant and animal origin shall be recycled as input in plant and livestock production and for energy production;

· production decisions shall take account of the local or regional soil, agro climatic and ecological balance;

· plants shall be primarily fed through the soil ecosystem;

· maintenance of animal and plant health shall be based on preventative techniques including selection of local appropriate breeds, species and varieties;

· feed for livestock shall come primarily from the holding where the animals are kept or shall be produced in cooperation with other jaivik farms in the same region;

· the highest level of animal welfare shall be observed;

· local breeds of animals well adapted to local conditions will be favoured, due to their vitality and their resistance to disease and health problems;

· jaivik livestock feed shall be composed essentially of agricultural ingredients from ‘Jaivik Krishi’ and of natural substances;

· husbandry practices which enhance the immune system and strengthen the natural defence against diseases shall be used;

· aquaculture production shall minimise the negative effect on the aquatic environment;

· feed used in aquaculture shall be from sustainable fisheries or composed essentially of agricultural ingredients from ‘Jaivik Krishi and of natural non-agricultural substances;

· polyploid animals may not be used.

A detailed section of the draft policy document is devoted to the erection of producer companies and the marketing and labeling of Jaivik products.

The full draft text of the Jaivik Krishi policy (together with annexures listed in that document) can be found at www.ofai.org).

Report of Tej Pratap Committee

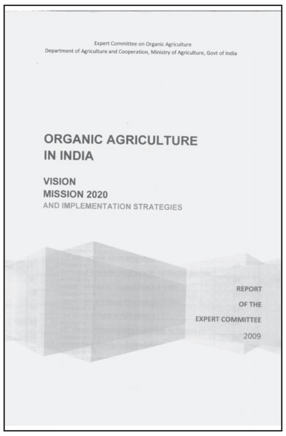
Several Expert Committees have been set up by the government from time to time to go into various aspects related to the promotion of organic farming.

Many agencies have been set up includingthe Integrated Nutrient Management (INM), division of DAC; National Horticultural Mission (NHM), DAC; Directorate of Marketing and Inspection, (DMI), DAC; APEDA, Ministry of Commerce, North Eastern Council.

Government therefore decided to integrate all existing schemes under one dedicated authority and constituted this committee on 28th October 2008. The 9 member committee was headed by Dr. Tej Pratap.

Beside this term of reference, the committee was also asked to look into the following:

a) Formulate a vision document with appropriate implementation strategies for promotion of organic farming in the country during next 10 years.



Expert Committee on Organic Agriculture
Department of Agriculture and Cooperation, Ministry of Agriculture, Govt of India

ORGANIC AGRICULTURE
IN INDIA

VISION
MISSION 2020
AND IMPLEMENTATION STRATEGIES

REPORT
OF THE
EXPERT COMMITTEE
2009

b) Suggest ways and means to implement the vision.

c) Examine the possibility of low cost alternative certification system such as PGS.

d) Examine the possibility of promoting organic based sustainable agriculture, particularly in hilly and tribal areas where input use and market surplus are negligible, with or without certification requirements.

The committee has since submitted a report called ‘Organic Agriculture in India’ which comprises 36 pages and includes around 80 pages of annexures. We hope that the Ministry of Agriculture accepts the principal recommendations of the report, especially regarding the implementation of the PGS of farm certification.

In fact, the committee would have benefitted if it had called for its deliberations members of the PGS Organic India Council who could have placed before it the considerable work that has been already done by the Council to implement the PGS in India.

The Report as a whole reflects the dynamism of the Chairperson who has given considerable portion of his most recent years to strengthening the organic farming movement in India.

Government goes organic

On 4th January 1994, the *Business Standard* announced that the Govt. of India was allotting Rs.26 crores for promoting organic farming in the country. This was being earmarked in the then 8th Plan. The programme would involve Krishi Vigyan Kendras, farm universities and NGOs.

State Governments were directed to cover a minimum of 1,600 hectares in each district through training and demonstrations in organic farming. Funds would be provided to the Kendras and NGOs who had developed locally relevant methods of composting and organic farming. A sum of 20 lakh each would be given to 10 medium sized municipalities to be identified by State Governments to set up composting units.

The Centre also decided to give two awards at the national level to the two best States for organic farming efforts. Cash awards of Rs.5 lakhs and Rs.2 lakhs would go to two panchayats excelling in promoting organic farming and cash awards of Rs.25,000 and Rs.15,000 would go to the two best organic farmers.

A major shot in the arm of the organic farming movement came from Maneka Gandhi, then Minister of State for Social Justice and Empowerment. She decided to set up a chain of green shops all over the country which would, among other things, also market organic produce. Ms Gandhi stimulated TRIFED – the government cooperative dealing with tribal produce – to flesh out and coordinate the scheme.

The programme commenced with the opening of 'Tribes,' Delhi's first shop to market the products of tribals including their organically grown foods. After Gandhi's departure, however, it lost focus. Ms Gandhi's insistence that organic food be marketed first in India went out the window.

The real stimulus for the Government of India to take organic farming more seriously came in the wake of reports that the European Union had rejected several food consignments due to unacceptable levels of pesticides. Anxious that the export trade should not collapse overnight, the government decided it was time to set up a system which would recognize organic farming and certify organic farms at least for the purpose of export. Thus within a few years an elaborate infrastructure – without any real spiritual commitment – was set up to dabble in organic farming. Significantly, the entire initiative for the organic farming project came not from the Ministry of Agriculture but through the Ministry of Commerce. One of the secretaries to the Ministry of Commerce in fact wrote a devastating critic of the ecological and health impacts of chemical agriculture which was circulated extensively abroad.

The National Programme on Organic Production (NPOP), was drawn up in the year 2000. A National Steering Committee was set up to direct the project. It decided to recognise a few conventional commodity boards as accreditation agencies. These included APEDA, the Spices Board, the Tea Board and the Coffee Board.

The NSC naturally turned mainly to APEDA as the prime agency for master minding the entire certification and export of organic produce.

APEDA had no expertise in organic farming so in true colonial fashion it consulted with experts from abroad; a few were imported to India to write the national standards which were later released as the National Standards on Organic Production (NSOP). Naturally, the NSOP was completely Eurocentric and reflected none of the great strengths and traditions of organic farming within the country.

The four accreditation agencies set about recognising inspection and certification agencies. Initially, most of the certifying bodies allowed registration were based in Europe and it soon became a scandal that the cost of organic certification for European customers was now being met by Indian organic farmers, thus effectively stealing whatever premium they hoped to earn.

Later, these agencies set up offices in India and began certifying farms relying upon Indian inspectors.

While this was going on, there was a parallel move within the Government and the ICAR (notably under the initiative of Dr. Rajendran) to develop a unique Indian brand name for the country's organic produce (*jaivik krishi*).

The Ministry of Agriculture & Co-operation set up a Task Force on Organic Farming. This Task Force – which was extremely sympathetic to organic farming – eventually submitted its report making several recommendations. Subsequently there was a move to set up a Jaivik Krishi system. Several meetings were held which have not to our knowledge ended in any practical achievement or form.

Partly as a result of the Task Force recommendations, however, the government of India decided to convert the National Biofertilizer Development Centre into its 'National Centre of Organic Farming' (NCOF).

It must be fairly conceded that NCOF took its new job quite seriously. Under the inspirational leadership of persons like Dr. P. Bhattacharya and now Dr. A.K. Yadav, NCOF has done commendable work to promote organic farming within the country. (The list of NCOF centres is given in a separate box.) The NCOF brings out a journal on organic farming as well. (For more details of the work of the centre, please see Dr. Yadav's interview in this chapter.)

Several State Governments have been more openly supportive of organic farming movements in their areas. Some like Mizoram have passed laws to promote organic farming.

However, the principal agencies of the Central Government dedicated to agriculture still refuse to take organic or sustainable farming seriously. While many scientists agree that organic farming is worth a try considering the many innovations that the organic farming community has come up with, many conventional scientists continue to be hostile. A very recent almost flagrant indicator of this hostility can be seen in the recent report of the Punjab Farmers Commission headed by Dr. G. S. Kalkat. The agricultural universities system, the agricultural departments, the various Boards, etc., still continue to unabashedly and wholeheartedly promote chemical agriculture (and more recently, genetically engineered crops as well).

State Organic Farming Initiatives

The progress of enactment of laws and formulation of State policies on Organic Farming, Non-Pesticide Management (NPM) of crops, GM-free crop seeds and other agricultural practices is at different stages in the various states of the Indian Union. The state of Mizoram has taken the lead in enacting The Mizoram Organic Farming Act, 2004 through an act of its Legislative Assembly on 12 July, 2004. The state of Karnataka has given its farmers the 'Karnataka Agriculture Policy, 2006' with emphasis on organic farming, as a Rajyotsav or Statehood Day gift on 01 November, 2006. The Kerala State has finalized the 'Kerala State Organic Farming Policy, Strategy and Action Plan' through the Kerala State Biodiversity Board with NGO participation in April, 2008. In the other states, draft Organic Farming Policies and Strategies have been proposed by NGOs for the consideration and adoption by the State Governments.

The present status, state wise, is as under:

1. Andhra Pradesh: Has a draft Policy
2. Arunachal Pradesh: No draft policy
3. Assam: No draft policy
4. Bihar: No draft policy
5. Chattisgarh: No draft policy
6. Goa: No draft policy
7. Gujarat: No draft policy
8. Haryana: No draft policy
9. Himachal Pradesh: No draft policy
10. Jammu & Kashmir: No draft policy
11. Jharkhand: No draft policy
12. Karnataka: Karnataka Agriculture Policy, 2006
13. Kerala: Draft policy, strategy and action plan, 2008
14. Maharashtra: Draft policy proposed by MOFF
15. Manipur: No draft policy
16. Meghalaya: No draft policy
17. Mizoram: Organic Farming Act, 2004
18. Nagaland: State NEPED programme. No policy.
19. Orissa: Organic farming included in main policy.
20. Puducheri/Pondicherry: No draft policy
21. Punjab: No draft policy
22. Rajasthan: No draft policy
23. Sikkim: Declared as an 'organic State'
24. Tamil Nadu: No draft policy
25. Tripura: No draft policy
26. Uttar Pradesh: No draft policy
27. Uttarakhand: Organic Commodities Board
28. West Bengal: No draft policy
29. NCT Delhi: No draft policy
30. UT Andaman & Nicobar Islands: No draft policy
31. UT Lakshadweep Islands: No draft policy

Laws on Organic Farming:

MIZORAM

Mizoram is the only state in India which has enacted an Act or law on Organic Farming. The 'Mizoram Organic Farming Act, 2004' extends to the whole of the State , except the autonomous Districts. The Act seeks to enforce the National Standards for Organic Products (NSOP), use the NSOP logo or symbol and to use APEDA, Spices Board, Tea Board, etc as the accreditation agencies. It seeks to work towards a transition from conventional inorganic farming practices to organic farming as a policy.

The Act adopts the National Policy and Programme for Organic Production [NPOP] for the state of Mizoram, with such modifications as may be needed. It empowers the state to:

1. Notify areas, including private land, for organic farming;
2. Make infrastructure and inputs available for such activity;
3. Facilitate certification under NSOP, and
4. Promote marketing of organic produce in local, national and international markets.

State Policies and Strategies for Organic Farming:

KARNATAKA

The state of Karnataka has given its farmers the 'Karnataka Agriculture Policy, 2006' with emphasis on organic farming, as a 'Rajyotsav' or Statehood Day gift on 1 November, 2006. This is not fully an organic farming policy, as it includes conventional farming also. Its philosophy revolves around the 'Pancha sutra' for agricultural development:

1. Protect and improve soil health;
2. Conserve natural resources, including minor irrigation;
3. Make credit available in time;
4. Integrate post-harvest with production processes and,
5. Enable easy lab-to-land transfer of technology.

It is a farmer-centric enabling policy for organic farming. It seeks to promote different crop mix in different agro-climatic regions to maximize production through increased efficiency. It seeks to establish a 'Rainfed Agriculture Commission' to maximize agri-horticultural production in non-irrigated areas.

In the agriculture education sector it seeks to re-orient the two Universities of Agricultural Sciences (UAS) at Bangalore and Dharwad from project-driven research to demand-driven research with a farmer-centric approach. It seeks to introduce diploma courses in addition to the existing under- and post-graduate programmes.

In particular, the Karnataka Agriculture Policy, 2006 acknowledges thus: 'The chemical approach to productivity augmentation followed since the mid-sixties has depleted the natural resource base for sustainable agricultural growth,' and adds, 'Unless the disturbed natural base equilibrium is restored, sustainable agricultural growth with competitive edge will not be possible.' The aim of the new policy is stated thus: 'Holistic development of natural resources aiming at sustainable livelihood and security for all life forms in the region will be the focal point of future strategy.' Specifically this involves:

1. Incentives for organic farming.

2. Listing of land degrading chemicals and their critical doses.

3. Introduction of organic farming in the curriculum at school level.

4. Protection and development of local livestock breeds.

5. Development of organic seed banks.

6. Mid-day meal scheme in schools to use organic food.

7. Subsidies on organic farming and post-harvest operations.

8. Promotion of organic farmers associations.

9. Use of mass media to promote organic farming.

KERALA

The vision statement of the Kerala State Organic Farming Policy Strategy and Action Plan is to 'make Kerala's farming sustainable, rewarding and competitive, ensuring poison-free water, soil and food for every citizen.' This document has been prepared by the Kerala State Biodiversity Board in consultation with the NGOs but is yet to be adopted formally by the Government.

The strategies of the above policy are:

1. Ensuring seed sovereignty: that the farmers own the varieties they grow.

2. Phased implementation of the policy: 20 percent area coverage annually.

3. Working through groups like UGs, SHGs, PGS-LGs.

4. Strengthening soil & water conservation measures, promoting mixed farming.

5. Ensuring input availability; promoting value-added products, simple certification.

6. Financial, research and training back-up for organic farming.

MAHARASHTRA

The Maharashtra Organic Farmers Federation (MOFF) circulated on 07 April, 2007, its draft 'Policy on Organic Farming' to be adopted by the Maharashtra State Government. Its objectives are:

1. To improve soil fertility and productivity, lost by over-exploitation by conventional methods.

2. To substantially reduce the cost of cultivation

3. To promote Appropriate Low External Input Sustainable Agriculture (ALEISA).

4. To ensure judicious use of irrigation water.

5. To promote multi-level, mixed- and multiple-cropping.

6. To ensure rural employment and reduce migration to urban centres.

7. To promote Self-Help Groups (SHGs) and User Groups (UGs).

8. To catalyze institutional changes in research and education for promotion of organic food.

9. To make the environment healthy and pollution free.

Since 55% of the state's population is dependent on agriculture and 85 % of this is rainfed producing 40 % of the food grains, organic farming can determine the sustainability of the state's economy. It is proposed to set up a Maharashtra Organic Development Board chaired by the Principal Secretary for Agriculture. (A parallel for this has been functioning in Nagaland for the last ten years under the name of NEPED, acronym for 'Nagaland Empowerment of the People through Economic Development' supported by IDRC and ICEF.)

SIKKIM

In February 2003, the then Chief Minister of Sikkim, Shri Pawan Chamling, declared his intention in the budget session of the Sikkim Legislative Assembly to make Sikkim an organic state, doing away with the use of synthetic fertilizers, pesticides, plant growth regulators and additives.

This decision has been arrived at with the objective to achieve an economically and environmentally sustainable production system of agriculture and to promote soil, plant, animal, human and environmental health and well-being. With so many benefits of organic farming, it becomes a policy seeking to promote technically sound, economically viable, environmentally non-degrading, and socially acceptable use of natural resources – land, water and genetic endowment to promote sustainable development of agriculture.

The concerned Departments of Agriculture and Horticulture have already started the measures to discourage use of artificial fertilizers and pesticides along with simultaneous substitution of requisite plant nutrients and plant protection measures through the available organic alternatives.

Sikkim, being a state with mixed farming system established long ago and being one of the states with the lowest consumption rates for chemical fertilizers and pesticides, has all the advantages for going organic. The present status of fertilizer consumption in Sikkim is 20.38 kg per hectare in terms of materials or 10.26 kg per hectare in terms of nutrients, whilst the present consumption rate of pesticides is 24 grams per hectare only. There is a need for initial sensitizing process and initiation with available facilities and then with gradual development of infrastructures for organic research, inputs, legislation, handling and marketing.

The prospective roadmap to organic farming in Sikkim takes into consideration the two clear-cut approaches that can be adopted at present:

Firstly, it would be worthwhile to discourage the use of artificial fertilizers and pesticides and making simultaneous substitution with organic manures and biological plant protection measures.

Secondly, it is necessary to initiate establishment of basic infrastructures and notify statutory requirements to effect the actual organic farming process in Sikkim in the absence of national policy, standards, and accreditation, certification and marketing systems.

The programmes for going organic in Sikkim started with substitution of synthetic fertilizers by organic manures and fertilizers like organic fertilizers, bio-fertilizers, effective microbial technology, organic soil conditioners, agronomic practices, vermicompost and other organic manures and composts as well as with the substitution of chemical pesticides by biological measures like agronomic practices, mechanical control measures, biological pesticides, legislative and biodynamic means. This process will be intensified in a gradual manner, ultimately doing away totally with the use of artificial fertilizers and pesticides in five to six years period.

Organic Certification

In today's 'rational' and 'modern world', farmers who grow their crops without caring for the soil or who douse their plants in deadly pesticides do not have to label their produce as unhealthy or unsafe. However, those who grow food without poisons and without damaging either the soil or its living creatures, are required to certify their products as 'organic' after paying huge certification charges.

Truly this world is upside down, without an iota of sense.

The certification bug hit Europe first, where almost all crops are grown exclusively on chemical fertilisers and supported with synthetic pesticides. Since organically grown food was the exception there, those who first began to grow it fell into the trap of informing consumers that it was wholesome and poison-free.

As will normally happen in such circumstances, expertise was soon developed in the form of certification agencies. These included groups like FiBL, Ecocert, IMO and several others. Soon these certification agencies proliferated like some new kind of pest.

In almost every country in Asia and Africa, modern agriculture is still not the norm. Instead, most areas grow food with very little reliance on chemical fertilisers. Since a huge quantity of food is grown on rainfed or dry lands (without irrigation), chemical fertilisers in any event make no sense whatsoever in these areas,

The need for certification became compelling in India only after export consignments from India to Europe were rejected in the late nineties due to unacceptable levels of pesticide residues.

In true colonial fashion, the government of India first went to IFOAM and the European agencies and requested them to assist with the installation of a certification system for India. It did not think that several organic farmers in India could be useful guides as well. Our policy makers still live in a Eurocentric world.

Thus the government of India's involvement in organic farming and organic certification was at that stage not linked or based on any commitment to the idea of organic farming but largely if not exclusively to meet the needs of exporters and to prevent the export industry from collapsing

Therefore, it is no surprise to find that the entire 'official' stimulus for organic farming in India has remained within the export agencies like APEDA or the Ministry of Commerce.

Thus the Ministry of Agriculture website does not have any document, discussion or report on organic farming. Whatever is of relevance is to be found at the website of the Ministry of Commerce or APEDA which is the agency set up for export of agricultural products from India. That too is only related to export. The first position paper in fact in favour of organic agriculture (and critical of conventional farming) was written by an Additional Secretary in the Ministry of Commerce.

The entire project to set up infrastructure for sale and export of organic produce came to be labelled the National Programme on Organic Production (NPOP). The NPOP was not concerned really with the growth of organic food, conversion of farms from chemical to organic inputs, or an increase in organic food production. It was marginally concerned with the production of food for the domestic market.

By the year 2000, the Ministry of Commerce had set up the National Steering Committee (NSC) to oversee the entire infrastructure on organic certification. The NSC appointed APEDA and a few other government agencies as 'accreditation agencies.' Thus the Spices Board, the Tea Board and other agencies involved largely in export agriculture (and promoting all the while huge quantities of chemicals) were recognized for the purpose of registering agencies to certify farms for organic export.

Certain agencies like IMO, INDOCERT, ECOCERT, SGS, NOCA were recognized as agencies to file the necessary field report and issue certificates recognizing organic farms.

Once the system of certification agencies was set up, the first years of organic certification proved to be frightfully expensive since the European agencies would only recognize the reports of their own inspectors. Hence only large farmers with a huge export market were recognized as organic farms. The first list of such exporters on the Ministry of Commerce website came to 137 parties and included Goa's largest cashew exporter and the institute of the father of the green revolution, the M.S. Swaminathan Research Institute based in Chennai.

(APEDA's website lists a total of 142 exporters for the year 2007-2008.)

Better sense prevailed and fairly soon, due to the absurd cost of using European inspectors, certification agencies began to employ Indian inspectors and some local agencies like NOCA were also set up. Despite this, however, costs remained prohibitive and most of the small farmers continued to remain outside the framework of organic certification even if they required it or desired it. Government has recently set up the 'Agmark Organic' labelling system, based on third party inspection, for purposes of the domestic market.

The Indian authorities managed to acquire both USDA equivalence for the NPOP and the EU third country listing, in the same year which is quite a significant achievement.

Enter the Participatory Guarantee System (PGS)

Within the civil society, however, and precisely due to the problem of high certification costs, there was a move to set up a more credible and realistic certification system.

The first moves in this context were made by OFAI. After several deliberations, OFAI published its organic farming standards for third party certification within the association. It set up examinations for organic farmers who were willing to visit other organic farms for purposes of certification. The unique feature of the OFAI system is that it is based on organic farmers as farm 'visitors'. OFAI, in fact, does not recognize non-farmer inspectors.

OFAI also finalized its own label for the sale of organic farm produce and commenced third party certification by 2007. It did not seek any recognition of its system from any government authority since under the law the government itself did not have any power or provision to recognize an organic certification system for the domestic market.

In spring 2006, FAO and the Ministry of Agriculture, in consultation with farmers, NGOs and state government officials, began working on a model PGS programme specific to India. The Delhi office of the Food and Agriculture Organization (FAO) took the initiative to introduce the PGS system into India. The FAO organized the first PGS setup meeting in Goa together with the Ministry of Agriculture. Pursuant to this meeting and after much deliberation a pilot scheme for testing of the PGS in India through 14 NGOs was taken up.

These 14 NGOs constituted themselves into the first ad-hoc PGS Organic India Council (PGS OIC). The council took the responsibility to formulate the basic documents necessary for conducting organic certification using PGS.

The council met for a second time in Goa in April 2007 2007 to finalize further details. The meeting was explicitly called to review the pilots which individual members of the original 14-member PGS Organic India National Council had committed for completion by 31st March 2007. Eventually the confederating groups decided to register the PGSOIC as a society under the 1860 Societies Act in Andhra Pradesh.

The PGS today is already functioning though not in all the areas of the country. Several organizations, including DDS, Timbuktu Collective and the Keystone Foundation have begun marketing their produce under the PGS label. The council has also recently brought out its own newsletter and maintains its own website: www.pgsorganic.in

What is PGS?

PGS is the organic farmers' own initiative to get together to provide a quality assurance guarantee that the food they produce is 'organic.'

A practical uncomplicated system of certification and an assured market are the two poles of an organic quality assurance guarantee.

Today, what are generally referred to as 'Third Party Certification' systems have become the dominant means of organic guarantee.

Participatory Guarantee Systems, on the other hand, are systems of quality assurance that are directly managed and controlled by organic producers.

The difference is in the approaches of the two systems. PGS complements the organic movement as it is set up and managed by the very farmers and consumers that it serves. Importantly, there is no universal models of PGS. Each variant is adapted and specific to the individual communities, geographies, politics and markets or their origin.

While Third-Party Certification is an essential component to world trade, there are downsides to the system. The inherent expense and paperwork required in a multi-level system discourages most small organic producers from being certified at all. This limits local and domestic trade as well as access to organic products. Worse yet, it limits the growth of the organic movement as a whole. The recent trend is that big agribusiness farms are benefiting from certified organic status and market premiums more than small-scale producers that could use these benefits the most.

In an attempt to reduce the inequality of this trend, a number of alternative methods to guarantee the organic integrity of products have been developed for small domestic producers, and they are growing rapidly.

IFOAM has a Task Force on Participatory Guarantee Systems put in place to take this dialogue further.

The year 2006-2007 has led to the PGS being seen as an important cog in the wheel of organic agriculture. There are attempts being made to develop PGS in various countries like Peru, South Africa, Bolivia, Kenya, Costa Rica, Uruguay, India and the Philippines. With growing domestic consumer concern over pesticide residues, the government has recognized the need to support and encourage organic production for domestic consumption as well - specifically from millions of India's small diversified farmers. For most of these farmers (many of who are illiterate) third party certification is not seen as practical, whereas PGS is.

The PGS documents as finalized have been translated into 8 regional languages including Marathi, Tamil, Hindi, Telugu, Kannada and Malayalam.

There is now a common PGS logo all over the country with individual institutions adding their own brand names on the product in their areas.

PGS programmes adhere to the strictest organic standards, but the compliance mechanisms used are specific to small diversified farmers selling into local and domestic markets.

The structure is being slowly built up from below with the scheme based on farm appraisals carried out by farmer peers and facilitated by NGOs.

PGS in India has been designed for small farmers selling into domestic, primarily local markets, and this thrust is seen as crucial to its success. There are no false illusions among PGS pioneers that the PGS will provide an exclusive universal solution to the demand for a credible organic guarantee any more than Third Party Certification.

PGS and Jhum Cultivation

Considering that jhum is organic by default, harmonizing jhum with PGS will only validate and strengthen the processes of jhum towards sustainable farming system. A large percentage of the population in the rural upland areas continues to depend on jhum. In the present situation, harmonizing jhum with PGS would provide people opportunities for higher income, ecological security and appropriate policy support.

There have been emerging persistent voices from across South East Asia, Africa and Latin America for giving jhum the due recognition it deserves as an ecologically managed agricultural tradition. 'The Shillong Declaration on Shifting Cultivation in the Eastern Himalayas' came at the culmination of a meeting of participants from the Eastern Himalayan countries, representing government agencies, farmers, international bodies, non-government organizations, academia, science and research institutions, local institutions, international donors and development assistance agencies, the private sector, and other professionals, concerned about shifting cultivation and shifting cultivators, regionally and worldwide in Shillong, Meghalaya, India from 6 to 8 October 2004.

The declaration asked for 'all policies and actions to be founded on the following guiding principles: To support decentralized, participatory, multi-stakeholder. Interdisciplinary, eco-regional, and adaptive management approaches that respect human and cultural diversity, gender equity, livelihood security, and enhancement as well as environmental sustainability, where we value and build upon both traditional and scientific information and knowledge.'

This declaration if taken cognizance of and acted upon will take the endeavour to give jhum its due recognition and an authentic place in policy a step further.

Key Features of PGS India are:

Credible guarantee; Less paperwork; Low cost; Organic pledge;

Social control as a compliance mechanism, Empowerment of small farms; Subtext of training and support built into the system;

Providing support to new and in-conversion organic farmers.

Roles and Responsibilities:

The administrative and operational process is so stratified that although responsibilities are shared between the local groups, facilitating councils and the PGS Organic India Council none has enough control to dominate the process as a whole.

PGS is therefore seen by all – especially by organic farmers – as an emerging answer to authenticating the produce of organic farms in a manner that does not hurt the farmer but provides a quality assurance guarantee for the consumer as well.

Let those in charge ensure that PGS in India does not fail at any cost.

PGS Organic India Council Members List

Institute of Integrated Rural Development (IIRD)
Aurangabad, Maharashtra
Tel: 0240-2376336
Website: www.iird.org.in
Email: jdaniel@iird.org .in

Deccan Development Society (DDS)
Hyderabad, Andhra Pradesh
Website: www.ddsindia.com
Email: ddshyderabad@gmail.com
Tel: 040-27764577

Chetana Vikas
Wardha, Maharashtra
Website: www.chetanavikas.org
Email: mail@chetanavikas.org
Tel: 07152-241931

Pan Himalayan Grassroots Development Foundation
Post Bag # 3
Ranikhet 263 645
District Almora
Uttarakhand
Phone: +91 5966 221516
+91 5966 221654
Mobile: +91 94120 93286
kpaul@grassrootsindia.com
Website:www.grassrootsindia.com

Organic Farming Association of India (OFAI)
Mapusa, Goa
Website: www.ofai.org
Email: myofai@gmail .com
Tel: 0832-2255913

Convenant Centre for Development (CCD)
Madurai, Tamil Nadu
Website: www.ccd.org.in
Email: mdu_ccd@sancharnet.in
Tel: 0452-2607752

Keystone Foundation
Kotagiri, Tamil Nadu
Website: www.keystone-foundation.org
Email: kf@keystone-foundation.org
Tel: 04266-272277

Timbaktu Collective
CK Palli, Andhra Pradesh
Website: www.timbakatu.org
Email: timbaktu.organic@gmail.com
Tel: 08559-202335

Thanal
Thiruvananthapuram, Kerala
Website: www.thanal.org
Email: jayakumar@thanal.org
Tel: 0471-2311896
(Source: Brochure)

For more details:
Contact: info@pgsorganic.in
Website: www.pgsorganic.in

PGS Local Groups

Organization	States	Number	Total
IIRD	Maharashtra (IIRD)	78	
	West Bengal (SEVA)	10	
	Karnataka (IIRD)	5	93
OFAI	Maharashtra (MOFF)	44	
	Uttar Pradesh (KVK)	2	
	Kerala (INFACT)	1	47
Keystone Foundation	Tamil Nadu	13	13
Deccan development Society (DDS)	Andhra Pradesh	41	
Timbaktu Collective	Andhra Pradesh	17	
Chetana Vikas	Maharashtra	16	
Covenant Centre for Development (CCD)	Orissa	3	77
Total			230

List of Accredited Certification Bodies Under NPOP

1. Bureau Veritas Certification India Pvt. Ltd.

(Formerly known as BVQI (India) Pvt. Ltd.)
Contact Person: Mr. R. K. Sharma, Director
Address:
Marwah Centre, 6th Floor
Opp. Ansa Industrial Estate
Krishanlal Marwah Marg
Off Saki-Vihar Road
Andheri (East), Mumbai-400 072
(Maharashtra)
Tel. No: 022-66956300, 56956311
Fax No. 022-66956302 / 10
Email: scsinfo@in.bureauveritas.com

2. ECOCERT India Pvt. Ltd

Contact Person: Dr. Selvam Daniel,
Country Representative
Address:
Sector-3, S-6/3 & 4,
Gut No. 102, Hindustan Awas Ltd.
Walmi-Waluj Road
Nakshatrawadi Aurangabad – 431 002
(Maharashtra)
Tel. No: 0240-2377120, 2376949
Fax No.: 0240-2376866
Email: ecocert@sancharnet.in

3. IMO Control Pvt. Ltd.

Contact Person: Mr. Umesh Chandrasekhar, Director
Address:
No. 3627, 1st Floor, 7th Cross,
13th ‘ G ’ Main, H.A.L. 2nd Stage,
Bangalore-560 008.
Tel. No: +91-80-25285883, 25201546, 25215780
Fax: 0091-80-25272185
Email: imoind@vsnl.com
Web: www.imo.ch

4. Indian Organic Certification Agency
(INDOCERT)

Contact Person: Mr. Mathew Sebastian,
Executive Director
Address:
Thottumugham
P.O. Aluva-683 105,
Cochin (Kerala)
Telefax: 0484-2630908-09/2620943
Email: info@indocert.org

5. Lacon Quality Certification Pvt. Ltd.

Contact Person: Mr. Bobby Issac, Director
Address:
Chenathra, Theepany,
Thiruvalla - 689 101 (Kerala)
Tel. No: 0469 2606447
Fax: 0469 2631902
Email: info@laconindia.com
Web: www.laconindia.com

6. Natural Organic Certification Agency (NOCA)

Contact Person: Mr. Sanjay Deshmukh,
Chief Executive Officer
Address:
Row House Banglow No-2
E-10 Bldg. Sun Empire,
Survey No. 7, 9 (Part)
Vadgaon- Budruk,
Sinhgad Road,Pune-411051
Mobile No.: 9822006586/ 9822148609
Tel. No: +91-20-65218063
Fax no: +91-20-25457869
E-mail: nocaindia@gmail.com
Web site: www.nocaindia.com

7. OneCert Asia Agri Certification Pvt. Ltd.

Contact Person: Mr. Sandeep Bhargava,
Chief Executive Officer
Address:
Plot No. 8, Pratap Nagar Colony
(Near glass factory and Gopalpura bypass),
Tonk Road, Jaipur - 302017
(Rajasthan)
Telefax No: 0141-2701882
Email: info@onecertasia.in

8. SGS India Pvt. Ltd.

Contact Person: Dr. Manish Pande, Head – Food Services
Address:
250 Udyog Vihar
Phase – IV, Gurgaon – 122 015
(Haryana)
Tel. No.: +91-124-2399990
Mobile No: +91-9871794640
Fax No.: +91-124-2399764
Email: manish.pande@sgs.com

9. Control Union Certifications

(Formerly known as Skal International (India))
Contact Person: Mr. Dirk Teichert, Managing Director
Address:
‘Summer Ville’, 8th Floor
33rd – 14th Road Junction
Off Linking Road, Khar (West)
Mumbai – 400052 (Maharasthra)
Tel. No.: 022-67255396/97/98/99
Fax: 022-67255394/95
Email: cuc@controlunion.in
cucindia@controlunion.com
controlunion@vsnl.com

10. Uttarakhand State Organic Certification Agency (USOCA)

Contact Person: Dr.B.S Bisht, Director
Address:
12/II Vasant Vihar
Dehradun-248 006, (Uttarakhand)
Tel. No.: 0135-2760861
Fax: 0135-2760734
Email: uss_opca@rediffmail.com
ua_usoca@yahoo.co.in

11. APOF Organic Certification Agency (AOCA)

Contact Person: Mr. K. Dorairaj, Chief Operating Officer
Address:
126, 1st Floor, Govindappa Road,
Off D.V.G. Road, Gandhi Bazar, Bangalore-560 004 (Karnataka) India.
Tel: +91-80-26677275, +91-80-41203848
Mobile: 09342349255 / 09886019021
Email: aocabangalore@yahoo.co.in
Website: www.aoca.in

12. Rajasthan Organic Certification Agency (ROCA)

Contact Person: Mr. Yashpal Mahawat,
Director
Address:
3rd Floor, Pant Krishi Bhawan, Janpath, Jaipur 302 005 (Rajasthan)
Tel. No.: 0141-2227104,
Tele Fax: 0141-2227456
Email: rocajpr.cb@gmail.com

13. Vedic Organic Certification Agency

Contact Person: Dr. (Mrs.) M. Usha, Managing Director
Address:
Plot No. 55, Ushodaya Enclave,
Mythrinagar, Miyanagar,
Hyderabad – 500 050
Mobile No.: 09290450666,
Tel. No.: 040-65276784,
Fax: 040-23045338
Email: voca_org@yahoo.com;

14. ISCOP (Indian Society for Certification of Organic Products)

Contact Person: Prof: Dr. K. K. Krishnamurthi, President
Address:
Rasi building,
162/163, Ponnaiyarajapuram
Coimbatore – 641 001
Tamil Nadu
Cell: 094432 43119
Tel. No.: 0422-2544199; 0422-6586060
E-mail: profdrkkk@yahoo.com; iscopcbe@yahoo.co.in
Website: www.iscoporganiccertification.org

15. Food Cert India Pvt. Ltd

Contact person: Mr. Srihari Kotela, Director
Address:
Quality House, H. No. 8- 2- 601/P/6, Road No. 10, Banjara Hills,
Panchavati Colony,
Hyderabad – 500 034
Tel. No.: +91- 40-23301618, 23301554, 23301582
Fax: +91-40-23301583
Email: foodcert@foodcert.in

16. Aditi Organic Certifications Pvt. Ltd

Contact person: Narayana Upadhyaya, Director
Address:
Aditi Organic Certifications Pvt. Ltd.
No. 531/A, Priya Chambers
Dr. Rajkumar Road, Rajajinagar,
1st Block, Bangalore - 560010
Tel.: +91-80-32537879
Fax: +91-80-23373083
Mobile: +91-9845064286
Email: aditiorganic@gmail.com
Website: www.aditicert.net

Certified organic production and export from India (2007-08)

Total production	9,76,646 M.T.
Total quantity exported	37,533 M.T.
Value of total export	Rs. 498 crores
Total area under certification (including wild harvest)	2.8 million ha
Total area under certified organic cultivation	0.45 million ha
Share of exports to total production	4% approx.
Increase in export value over previous year	30% approx.

Commodity-wise export data (2007-2008)

Commodity	Export Contribution (in Value)
Cotton	USD 26.36 million (Rs.123.88 Cr)
Basmati rice	USD 12.60 million (Rs.59.20 Cr)
Honey	USD 9.87 million (Rs.46.41 Cr)
Tea	USD 19.6 million (Rs.92.13 Cr)
Dry fruits	USD 17.94 million (Rs.84.31 Cr)
Processed food	USD 3.83 million (Rs.17.99 Cr)
Sesame	USD 1.94 million (Rs.9.13 Cr)
Spices	USD 4.27 million (Rs.20.09 Cr)
Medicinal & herbal plants/products	USD 2.25 million (Rs.10.59 Cr)
Others	USD 1.75 million (Rs.5.05 Cr)

Notification

GOVERNMENT OF INDIA
Ministry of Commerce & Industry
(Department of Commerce)
Directorate General of Foreign Trade
Public Notice No. 72 (RE-2003)/2002-2007
New Delhi, dated the 21 July 2004

In exercise of the powers conferred under paragraph 2.4 and 2.29 of the export and import policy 2002-2007, the Director General of Foreign Trade hereby lays down the following procedures for export of certified organic products in supersession of earlier public notice No. 19 dated 11th June 2001 and Public Notice No. 25 dated 2nd July, 2001:-

1. 'An agricultural product will be allowed to be exported as "organic product" only if it is produced, processed and packed under a valid organic certificate issued by a certifying agency duly accredited by the national steering committee for organic product (NSCOP) set up by the Ministry of commerce & Industry (Department of commerce). The committee will function as the National Accreditation Body for the purpose of accreditation of inspection and certification agencies.'

2. The inspection and certification agencies accredited till date by APEDA, Spices Board, Coffee Board and Tea Board Shall be deemed to have been accredited by the NSCOP and will be under the control of National Accreditation Body for the purposes of accreditation of inspection and certification agencies for organic product.

3. The National Programme for Organic Production (NPOP), which has been published by department of commerce in June, 2004 with a view to ensure orderly development of organic agriculture is annexed to this Public Notice.

4. This issues in public Interest.

(Gopal K. Pillai)
Director General of Foreign Trade
(Issued from file no. 01/91/180/000159/AM02/PC-III

Interview with Dr. A.K. Yadav, Director, National Centre of Organic Farming

Claude Alvares: What is the extent of Government support available now for the promotion of organic farming in India? Is the Government serious about this promotion?

Dr Yadav: Central Government support is available for awareness creation and technology transfer through trainings, demonstrations, seminars etc. Support is also available for trade fairs. Under National Project on Organic farming support is also available for establishment of compost, biofertilizers, biopesticides and vermicompost production units. Financial assistance is also being provided for capacity building for facilitation of certification at farmer's field. Under National Horticulture Mission financial assistance is being provided for adoption of 50 ha clusters for conversion to organic and certification.

Various state Governments are also providing need based assistance in their states as per the requirements of their farmers.

Launching of NPOP, NPOF, incorporation of organic in to NHM programme and acceptance of organic farming proposals under other schemes such as RKVY is an indication of Government's seriousness about the organic farming.

CA: What is the awareness about organic farming among political leaders and agriculture ministers and agriculture departments? Does the NCOF have any plans to approach these key actors in any way?

Dr Yadav: I cannot comment. NCOF's role is to popularize organic farming as per the guidelines of the programme.

CA: How many states have organic farming policies and schemes?

Dr Yadav: Nine states have defined/ drafted organic farming policies. Prominent among them are Kerala, Karnataka, Maharashtra, Orissa etc. Four states namely Uttarakhand, Sikkim, Mizoram and Nagaland have declared their intention to convert to 100% organic in some districts.

CA: Can you quantify the extent of support, for example, (at both central and state levels) in the form of support for institutions like yours, budget and plan support, schemes, etc?

Dr Yadav: National Project on Organic Farming has been allocated a sum of Rs. 150 crores for popularization of organic farming. Much higher funds are available under NHM. Similarly there is no ceiling of support in other schemes if appropriate proposals are submitted by states.

Many states have much larger allocation. Recently Karnataka has pledged to allocate Rs. 100 crores for promotion of organic farming in their state.

CA: Many countries are now adopting ten year targets for the conversion to organic? Would it be good for India to have such targets? If not, any other proposals in this direction from NCOF?

Dr Yadav: It's true that many countries are adopting ten year targets. Recently Department of Agriculture and Cooperation has constituted an expert committee for developing a vision document for promotion of organic farming in to the country. The committee has submitted its report very recently. The committee has proposed to convert 10 million ha into organic by 2020. Produce 30,000 crores worth of organic produce and make India No.1 country in organic production.

CA: What are the growth trends as far as organic production is concerned? Which states are doing better, which are doing something, which are doing nothing at all?

Dr Yadav: Internationally organic is growing at 15-25% since last 10 years. As per the statistics released by IFOAM and FiBL organization 32.5 million ha land is being managed organically (excluding wild harvest and forest area). Total organic trade during 2007 has crossed 46.1 billion US$, a growth of over 8 billion over previous year.

In India the area under organic farming is growing with very fast speed. India is the fastest growing country in the world in the field of organic farming. Although it is difficult to assess the overall area under organic farming, as there is no system of ascertaining such parameter, but based upon the area being registered for certification, the growth is phenomenal. Total area under organic management during 2003-04 was 42,000 ha, increased to 76,000 ha in 2004-05, 1,73,000 ha in 2005-06, 5,38,000 ha in 2006-07 and 8,65,000 ha in 2007-08.

As per IFOAM report India now has more than one million ha area under systematic organic management (this does not include the traditional organic area in hills, tribal belts and north eastern states).

CA: Would you support a scheme that would enable farmers to convert by taking care of the loss of production within the first three years?

Dr Yadav: At present there is no such proposal and approved component for supporting conversion to organic under NPOF. But under organic farming scheme of NHM, support is available for adoption of organic, which is a direct support for conversion.

CA: Is there any going back from organic farming in view of the recent support also being given to GE crops which are specifically banned in organic farming standards?

Dr Yadav: In my personal opinion India is a vast country with lot of heterogeneity in climate, weather, soils, crops and people. Therefore there is enough scope for all the forms and technologies. Organic farming can go ahead without any fear. Ultimately it is the farmer who has to choose which technology is best and economical for him.

CA: What is the most important issue affecting the promotion and spread of organic farming in India today in your view?

Dr Yadav: Absence of technology and research support is the biggest impediment. So far organic farming has survived on traditional wisdom developed by the farmers, but if we need to make it a mass movement then science based organic farming need to be promoted with adequate provisions for managing local and crop specific requirements, keeping in view of the availability of resource and local situations.

CA: What is the grand plan of NCOF in the next three years for promotion of organic farming?

Dr Yadav: Based on the advice of Expert Committee the mandates and activities of NPOF are under review. The public will know in due course of time.

National and Regional Centres of Organic Farming

The National Centre of Organic Farming (NCOF)

204, B-Wing, CGO Complex II, Kamala Nehru Nagar, Ghaziabad - 201 002, Uttar Pradesh.

The NCOF was formerly the National Bio-Fertilizer Development Centre, set up in 1983. The NBDC contributed towards the development of biofertilisers in the country by playing a pivotal role in capacity building, establishing commercial biofertiliser units and disseminating technical know-how for creating general awareness among planners, executive agencies and farmers. Over the years, valuable data have been generated on various aspects of biofertiliser technology, R & D, strain development and quality control.

When Government of India was looking to set up an institute for organic farming, it decided instead to rename the NBDC as NCOF and gave the newly named institution the job of promoting organic farming in the country as well.

The NCOF got a good grounding in organic farming through the dynamic leadership of Dr P Bhattacharya, a warm-hearted person who went out of his way to befriend organic farmers and learn from them. After he retired, Dr A.K. Yadav, another deeply committed person, has taken charge. The organic farming community couldn't ask for a better person to lead the transition to organic farming at a national level.

Dr Yadav is a great promoter of sustainable agriculture, attends NGO meetings regularly and at the national level, has put his entire energy and determination into support for PGS certification.

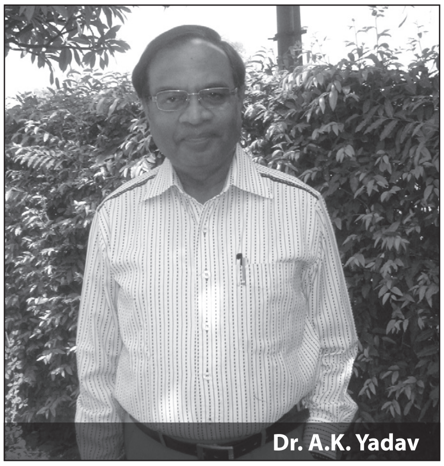
The NCOF brings out its own newsletter and maintains a website of its own:

The Centre operates through a series of regional institutions. Between them they cover all the States. Following is the jurisdiction of the various regional centres:

Uttar Pradesh, Uttarakhand and Delhi

Director, National Centre of Organic Farming

204 B, C.G.O. Complex-II, Kamla Nehru Nagar, Ghaziabad - 201 002, Uttar Pradesh. Ph.: 0120 2753844, 0120 2721896



Dr. A.K. Yadav

Biofertilizer Newsletter

Editor: Dr. R.N. Bisoyi, RCOF, Bhubaneshwar

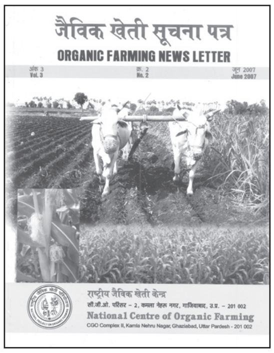
Biofertilizer Newsletter (BFNL) is a bi-annual publication under the National Project on Organic Farming, Ministry of Agriculture, Government of India.

For details and copies write to:

National Centre of Organic Farming
CGO Complex II, Kamla Nehru Nagar
Ghaziabad, Uttar Pradesh 201 002.

Organic Farming Newsletter

Edited by Dr. A.K. Yadav, Director


जैविक खेती सूचना पत्र
ORGANIC FARMING NEWS LETTER
June 2007
National Centre of Organic Farming

Organic Farming Newsletter (OFNL) is a multilingual quarterly publication under National Project of Organic Farming. Articles having direct relevance to organic farming technology and its regulatory mechanism, development of package of practices, success stories and news related to conferences, seminars etc. are featured .

For copies write to:

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Ghaziabad - 201 002, Uttar Pradesh

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Many of the principles underlying traditional agriculture have naturally become the basis of organic farming in India. In this *Sourcebook*, we use the term 'organic farming' as a general label for the following systems of agriculture:

* No-till or natural farming: particular variant started by Masanobu Fukuoka in Japan which dispenses with ploughing of the soil; always a feature of jhum, kumeri or swidden agriculture;

* Natueco farming, following the principles drawn up by Prof. G G Dabholkar;

* Zero budget natural farming, as propagated by Subhash Palekar;

* Alternative agriculture: doing farming using means other than chemicals. In non-industrialised countries, even fuel-based motor power is dispensed with;

* Permaculture: advocates the planting of perennial tree crops and employs the environment in planning farm activities;

* Biodynamic farming: exploits bio, lunar and solar rhythms in farming;

* Indigenous agriculture: farming based on successful and time-tested non-Western technologies and knowledge;

* Sustainable agriculture: promotes farming practices which enable a sustained use of the soil and thus do not degrade it;

* Alley cropping: planting trees and crops in alternate rows so that they give mutual benefit to each other.

* LEISA or Low External Input Sustainable Agriculture, originating from Dutch farmers and scientists committed to soft agriculture.

In medicine, we have allopathy, homeopathy, naturopathy and other 'pathys'. As one wit put it, every therapy is all right so long as it is accompanied by some 'sym-pathy'.

So is it here in this *Source Book*. All the farming methods espoused herein hold the following general principles to be incontrovertible:

• Nature is the best role model for farming since she does not use either chemicals or poisons nor demands vast quantities of water;

• Those farming techniques are best which are based on an intimate understanding of nature's ways. Only these can encourage

CHAPTER SIX

Principles of Organic Farming

sustainable use of the land as they do not assume mining the soil of its nutrients and do not degrade it in any way;

- The soil is to be considered a living system, not an inert bowl for unloading chemicals;
- The soil's living population of microbes and other organisms is a significant contributor to its fertility on a sustained basis and must be protected and nurtured at all costs;
- The total environment of the soil, from soil structure to soil cover, is more important for a healthy agriculture than any nutrients we may wish to pump into it.

In the following pages, we introduce you to principles of organic farming as these have been evolved by practising farmers and rare scientists. Once you have read this section, you may never wish to see chemical fertilizers and pesticides again. You may arrive at the welcome conclusion that what has been passed off as a 'green revolution' by the likes of M.S. Swaminathan or Norman Borlaug is by far the most short-sighted of the farming systems ever invented by human beings on this planet.

The basic argument that develops in this chapter is that nature is the most superior of all agriculturalists. Ghosh sets the ball rolling by observing that India is largely a country where organic farming has remained a continuing tradition. Albert Howard writes precisely on the aspect of the forest as a superior biomass production system. Claude Bourguignon works out a practical system by which we can reach a good way to achieve the productivity of a natural forest. Fukuoka rounds off the discussion with his views on natural agriculture.

Though these agricultural systems described above can feed the market, they do not require inputs from the market. They in fact ridicule the very idea of an input-agriculture. In the forest, biomass is the result of the interconnected activities of several populations – small and large mammals, birds, amphibians, reptiles, insects, termites, earthworms, microbes, soil bacteria – going about their own business. No one imports nutrients to place at the roots of the trees or shrubs in the forest.

'There's no salvation except through organic farming!'

Why did organic farming, which was so much in vogue in this country, recede here itself in this century? Was it due to any inherent shortcomings or due to something else? According to my analysis there are three reasons:

First, chemicalised farming based on factory made chemicals had a romantic beginning. During the first world war when some German scientists developed a process of making ammonia by combining hydrogen and nitrogen gases under pressure and then converting this ammonia into nitric acid to meet their military needs we were overwhelmed to see the wonderful effects of modern science. What thrilled us was the ability of this science to come to the rescue of the German state by enabling it to scorn the cessation of supply of sulphate from Chile. We were further dazzled when, after the war, the Germans – and following them the rest of Europe – applied this ammonia to increase foodgrain yields. This chemical-oriented technology had the advantage of the time and milieu. It developed at a time when nobody could even imagine that it could have any deleterious effects on soil, water or atmosphere or on the production of other items in the food package. It also grew in an environment where the deleterious show up much more slowly: the decomposition of soil organic matter in temperate climates is far less than in tropical countries. So it was easy to fall prey to its charm. Of all political leaders and social thinkers possibly Mahatma Gandhi was the only one who remained free from this illusion.

Secondly, we in India easily come under a spell of foreign technology. This is because our elite developed an intellectual slavery which continues till today. Seeing the Europeans and North Americans well-fed, well-dressed and equipped with labour-saving gadgets, we, as a nation, developed an inferiority complex and became imitative in everything, including farming. The leaders who gave direction to the Indian State after Independence, were least informed about farming. Moreover, the fact that both Euro-Americans and their rival, the Russians, accepted chemicalisation of farming made it appear that this farming technology was so superior as to be beyond dispute.

Thirdly – and this is the most important – we had inherited organic farming as a tradition. Neither our farmers nor our elite were aware of the science on which it was based. So it was easy to discard it as we have discarded certain other traditions which appeared to us as mere prejudices. In this case, the lure of immediate economic gain made the discarding easier. In any case, when the state as a whole pushed hard the ideal of an industrial-commercial civilisation – of course, with an admixture of 'cooperative commonwealth' verbiage – organic farming was bound to recede because it was just not compatible with this drive towards commercialism. The plea of feeding an ever-increasing population was used to lull farmers into a false sense of security in chemical-oriented farming.

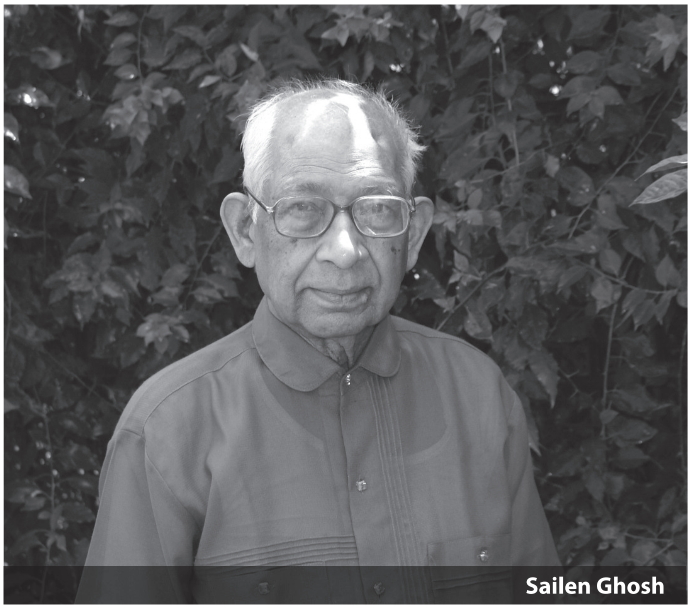
One important thing which many scientists often underplay or do not realise is the basic difference between the temperate and the tropical climate conditions. It is necessary to understand this difference to know why the USA, Europe and Japan, which are all in temperate climates, have escaped rapid destruction despite chemicalised farming and why the destruction caused by this method of farming is far more rapid in the tropics. In temperate climates, the rainfall is evenly distributed throughout the year. There is neither torrential downpour nor any long dry spell. As against this, in the humid tropical zones there is torrential rainfall for three or four months, during which there is a heavy run-off of the topsoil unless there is protective forest cover. This is followed by a long dry spell, during which the soil is baked hard and much of it cracks. Hence when the rains next come, this cracked soil washes away at an even greater rate. On the other hand, in the dry tropics, the rainfall is scanty, the particles of scorched soil disintegrate rapidly and the bits are blown off by the wind. Thus, the proneness for soil erosion is much higher in both wet and dry tropics. Besides, high humidity and high temperature cause high bacterial activity in the wet tropics leading to quick decomposition of soil organic matter and making the soil yet more prone to erosion unless there is continuing replenishment of organic matter. If nitrogenous fertiliser is applied under these conditions it leads to further oxidation of soil organic matter.

In temperate climates, the soil remains moist throughout the year. Snowfall in winter conserves organic material underneath. The soft flow of molten snow in summer, too, is beneficial to soil: it does not scour. This is why the organic matter status of soils in temperate countries is extremely higher. These have a larger cushion, with a high carbon-to-nitrogen ratio, and hence with a higher capacity for absorption of artificial nitrogen. This is the reason why both the eroding and the polluting effects of chemical fertilisers are much slower and less visible in temperate countries.

* * *

The real issue is not whether there is enough organic material to produce the needed quantity or quality of organic manure. The main problem is that we want to avoid the efforts necessary to collect the wastes and prefer the cosiness of a push-button system which factory production provides. Moreover, there is a belief that since the 'fertilising' impact of the chemicals is quicker, their addition will lead necessarily to instant incremental production. To those who subscribe to this belief, we would like to put a question: 'Are you sure that this addition of chemical fertilisers will really mean *addition of nutrition*?' In fact, there is a greater possibility of crop malnutrition.

It is known that nitrogenous fertiliser application usually leads not to better grains but to larger production of stem and leaves. This happens because Nature always seeks to maintain the ratio between total organic carbon and the total combined nitrogen constant in every part of her living empire. An increase in nitrogen, and the consequent lowering of the proportion of carbon sets in motion a process of restoration of the metabolic ratio by inducing more photosynthetic growth i.e. the growth of roots, stem and leaves. In like manner an increase in the proportion of carbon by an abundance of straw and other cellulosic material will also be harmful. It will raise the carbon nitrogen ratio too high. Nature will lock up all the nitrogen in the soil and prevent its availability to the plant. Even if the fertiliser is administered on a genetically dwarf variety and after the tillering stage is over, it will merely increase the number of grains or enlarge the grain size at the cost of bio-synthesis of nutritive elements. This means, its contents of starch, sugars, fats and oils will be more. Grains subjected to this kind of growth are marked by an imbalance in essential amino acids.


Sailen Ghosh

Recent researches by Dr. George Borgstrom, Professor of Food Science and Human Nutrition and Geography of the Michigan State University support this view. A quarter of a century back, Dr. Wm A Albrecht, Chairman of the Department of Soils, University of Missouri (USA) had also warned us against 'believing that all the organic or inorganic nitrogen being sold were being converted into proteins.' 'Protein production,' he said, 'is a bio-synthesis – a synthesis by life itself,' requiring interaction of all the essential elements including trace elements. Even at that time (1958) he had pointed out that for the nutritive value of the crops and the health of the plants, we must first look to the soil – to the geological, the chemical, the bio-chemical and the biological performances by which the numerous streams of life take off from the soil and continue to flow through the many species of plants and animals.' He even pointed to the crucial importance of calcium in growing protein-rich crops. Ironically, the practitioners of 'modern' science tend to forget that the application of power-packed nitrogenous chemical fertiliser on the soil tends to acidify the soil and aggravates its need for liming.

Thus, there is no legitimate basis for welcoming the nutrition-deficient high yielding varieties which merely push up the vegetative bulk and require quick release fertilisers therefore. Nor is there any justification for super charging chemical fertilisers on organic manure.

Quality preparation of organic manure involves blending optimally the carbon, nitrogen, phosphate rich materials, in which the trace elements are present in proportion and the crucial carbon-nitrogen ratio (C/N) is neither too high nor too low. This kind of preparation is within the competence of farmers, given certain guidelines. There should, therefore, be no question of adding some nitrogenous fertiliser and upset-ting the nutrient balance. We refer specially to nitrogenous fertiliser because there is a craze for it on account of its being known as a stimulator of growth and seed production and also because the potential for damage from its unbalanced use is much greater than from others.

Let us first take a look at the bounties in an undisrupted system. Not merely has nature given plant leaves the scope for producing carbohydrates by capturing the carbon dioxide from the atmosphere in the presence of sunlight and with the aid of moisture derived from the soil and for converting these carbohydrates later into sugars, starch, cellulose, lignin, etc. She has also made ample provision for the supply of nitrogen through the root system in a variety of ways so that the essential elements of life could be breathed into these sugars, particularly for synthesis of proteins and nucleic acids. Rains wash down the nitrogen generated by thunder. Bacteria in the nodules of leguminous plants capture nitrogen from the atmosphere and fix it into the soil. So do some ferns, some forms of algae and some genera of free living bacteria (azotobacter, clostridium). Various genera have been endowed with this quality so that this operation could continue under differing conditions.

The benefits of legume crops are often underestimated by our 'modern' scientists. It is being suggested that legumes do not leave enough nitrogen in the soil to promote the growth of successor crops. The question is: what is enough? A few days back, in a text book on biology meant for British school students I was reading an estimate that 'a good legume crop such as Clover can fix up to 90 kilos of nitrogen gas per acre in one season's growth.' I would like to get estimates for our agroclimatic zones. In any case, considering the fact that crop rotations with legumes in between two other crops, sustained India's soil fertility over centuries, despite the decline of the practice of returning wastes to the soil, there is strong basis for the time-tested conclusion that legume's contribution to nitrogen fixation is considerable. Rotational cropping is only next to mixed husbandry in the natural order.

There is yet another very interesting system of nitrogen supply in nature, which is universal in the forests and usual in the orchards and vegetable gardens. When the plant roots, growing in fertile soil, move downwards, active root hairs, abundant fungal threads invade the root cells, only to be absorbed by the latter. These threads may contain as much as 10 per cent organic nitrogen. Besides, their protein quality is well suited to digestion by root cells. This mode of plant nourishment by dense mate of nitrogen-rich fungi is called mycorrhizal association.

Probably the most important source of supply of nitrogen as also of other nutrients is the decomposition of animal and plant wastes. This is done by the decomposer bacteria and fungi.

From these it would be obvious that we can obtain from Nature much more of the beneficially utilisable nitrogen than we are getting now if only we know the pathways of its bounteous flows and cooperate with Nature in her systemic approach.

Nature adopts a somewhat different method in regard to the supply of phosphorous. This is because phosphorous is, unlike nitrogen, chemically highly reactive and it does not at all enter the atmosphere except as dust. Of course, the one method which is basic to all recycling is existent here too: it is the return of the plant and animal wastes to the soil. Animals eliminate excess organic phosphorous by excreting phosphorous salts in urine. There are also the phosphatising bacteria to convert phosphorous into stable forms of phosphate salts which remain bound with the soil. At the beginning of the rains, the mineralisation of organic matter releases phosphates for uptake by the plants. If the phosphate level near the soil surfaces low, but not too low, mycorrhizal roots may form to serve as efficient scavengers of phosphorous. The root-zone micro-organisms, too, may contain species such as phosphate-bacters which, by secreting phosphate enzymes, liberate phosphates locked up in the soil with compounds of very low solubility. These, too, prove that man has only to be an understanding partner and observe the rules of the game.

For the supply of all other macro- and micro-nutrients as also of vitamins and plant growth promoting substances, there are elaborate arrangements in natural soil systems. The soil abounds in countless forms of micro-organisms – bacteria, fungi, viruses, protozoa yeasts, algae etc. – to perform different but interrelated functions. Each produces different kinds of enzymes by which all stand to benefit. This is a highly complex nexus of relationships and a symbiosis of a very high order. High productivity is attainable only if this nexus of relationships is understood and nurtured in creative partnership with nature.

A wonderful fertilising agent of Nature is the earthworm population which, Charles Darwin said, are the 'builders of civilisation.' Earthworms – which thrive in moist and warm surface soil ingest soil, mix it with secretions from their own guts, and leave a far richer soil cast. These worms concentrate in the cast most of the nitrogen and mineral constituents present in the plant debris, faeces and cuticles of soil anthropods they ingest along with the soil. They are the principal agents for mixing the dead surface-litter more accessible to soil micro-organisms. They are the channelers and burrowers. By loosening the soils, they facilitate air inflow into the soil. By improving the soil structure, they improve the soil's capacity to hold moisture. In their death, too, the earthworms contribute handsomely. Their body tissues may contain up to 70 per cent protein. It is important to remember these facts about earthworms while we discuss organic farming versus chemical farming. Chemical farming tends to kill the earthworms.

An extremely interesting process is observable in nature, which inspires reverence. In the eco-sphere, just as there is a building up process working through the leaves (making carbohydrates, proteins and fats and thus building the structure of the plant), there is also a reverse process of breaking down of the soil organic matter into mineral matter. Organic matter is continually reverting to inorganic state to make mineral salts such as compounds of phosphorous, potassium, calcium, magnesium, sodium, iron, manganese, zinc, copper baron so that these could be available for absorption by the plant roots. *This breaking down process, apart from feeding the root hairs for the present, provides a reserve of mineral salts for the future.* This explains why even in the subsoil regions which underlie the poorest of the poor surface soil, there is always a reserve of mineral chemical constituents, may be in tough combination with others, which can be solubilised by deep-rooting plants.

The mechanism with which Nature endows the plant roots to solubilise these mineral salts of the sub-surface is also interesting. The respiration of the plant roots – which is like mild burning of sugar – releases carbon dioxide from the root hair which dissolves in soil water to form carbonic acid, a mild solvent.

In order to make the essential trace elements available to all, including the shallow-rooting plants in an undisturbed ecosystem, Nature has provided these elements in the upper soil layer itself. These mineral salts, needed in traces, come from the soil humus. They may also come as dissolutions out of, or as dispersions from, the surrounding rocks.

While we sing in praise of Nature's concern for sustenance of life, a question would be uppermost in the minds of the sceptics. Did not the very fact that man had to think of artificially reinforcing fertility show that natural processes had deteriorated or at least failed to deliver the goods? Yes, it is true that the soils have been losing in productivity. But why? It was because we snapped the nexus of relationships. First, the bond between agriculture and its foster mother, the forest, was snapped. The forest is a peculiar foster mother whose sustenance and protective care is needed in space-time continuum. The biotic material from the forest must flow to agricultural fields continuously. The underground water storages, which were many times the volume of lakes, and were the assurance of inexpensive water supply for agriculture could be induced only by the tree roots. And the forests needed to be not only in the hills but also in each village to perform its multiple functions of protection and enrichment. All these avenues we have destroyed in the cause of setting up the trappings for an unsustainable civilisation. Secondly, we avoided the labour of returning wastes to the soil in a form which is beneficial to it. Thirdly, we became partial to certain crops disregarding the benefits of mixed husbandry and rotational cropping and, therefore, became crazy after certain nutrients at the expense of Nature's systemic functioning.

Sceptics might still persist. Once a sceptic had asked me: 'If Nature is so beneficent, could it not be a little more generous in supplying nutrients particularly nitrogen, when this element alone constituted 78 per cent of the atmosphere?' The questioner was a technologist and was aware that nitrogen-bearing molecules such as proteins, nucleic acids, enzymes, vitamins, hormones account for much of plant bodies' – and even more of animal bodies – vital functions. That is why, his interest was focussed more on nitrogen. He was also trying to point to the fact that in the gaseous envelope surrounding the earth, nitrogen exists in a form which is not directly usable by the plants. The fact that atmospheric nitrogen is inert and does not enter into chemical reaction with any other element, except under great pressure appeared to the questioner to be an aspect of unkindness of Nature.

A question like this compels philosophical thinking about Nature's purpose concerning the behaviour of nitrogen, as also of other elements. A little introspection would show that if nitrogen had been easily reactive and if it had been more abundantly capturable, it would have poisoned the environment and dissipated the potential for life's existence. It would have created a profusion of nitrous oxides, the poisonous substance which even pierces the ozone layer. It could have produced many types of proteins that were toxic to living species. It could have also destroyed the very basis of interaction between the living and the non-living matter, i.e. the very condition for perpetuation of life on this planet.

It is to avoid such disasters that Nature had to adopt a double safeguard system. Nitrogen has first to enter this soil, whether by bacterial fixation from the atmosphere or through the decomposition of plant and animal wastes. It is only through the soil that it can enter the plant and animal wastes. It is only through the soil that it can enter the plant and animal bodies. Secondly even the release of nitrogen stored in the soil is not a one shot affair. It has to be in two stages – first, in the form of nitrite and, then as nitrate ions, in which form it is usable by the plants. Plant root hairs can absorb only the minutest of the minute, invisible particle which is electrically charged, that is, charged with the energetics for passage into root cells. If Nature had ordained the release of nitrate in greater doses than were in accord with the proportion of sugars, enzymes etc., being released in the soil sap by other forces, it would not have been useful for plant nutrition. Rather it would have leached to ground water levels and/or drained into surface waters causing nitrate poisoning. It would have also forced the denitrifying bacteria to be more active to release soil nitrogen to the atmosphere. Denitrification i.e., return of nitrogen to the atmosphere is nature's step to maintain the cycle.

It is also significant that 'by far the slowest step in this nitrogen cycle is the release of nitrate from the humus.' Let us ask ourselves: why did Nature make this the slowest step? Evidently, this was Nature's way to ensure thrifty use of nitrogen so that little nitrate gets released to the water from the soil. As a result, the nitrate content of natural surface water could be low, of an order of one part per million. Those who talk of forced fertilisation, of feeding the plant direct rather than through the soil and of speeding up plant uptake do not care for what happens to the plant cells or to the nitrate or phosphate level of the ground water or surface water. They completely miss the purpose of Nature's slowest step in releasing nitrate from the soil's store of nitrogen.

The solution is not forced feeding of the plants. The solution is to increase the store of natural soil nitrogen and to increase the efficiency of nitrate absorption by the roots. For both, it is the improvement of the humus status which is crucial. Contrarily, chemical fertiliser reduces this very humus. Thereby it perpetuates dependence on more and more chemicals. It is a choice between two roads. Because chemical fertiliser hits at the very core of natural processes, there is no scope of combining the natural and the artificial. It is like opting for smuggling operations. Once you make the choice, the inner logic keeps on working out till the journey's end.

Those who seek to conjugate farming with chemical farming are wasting their efforts in two ways – by engaging in a wholly unnecessary exercise and by trying to unite two entirely incompatible processes, which is impossible.

* * *

For a proper understanding of exactly how the beneficial effects of organic fertilisers get reduced by the mixed application of organic manures and chemicals, it is necessary to know the interacting relations between the myriad forces involved – the behaviour of soil particles with their constituent elements, soil micro-flora and fauna, soil solution, etc. – and the rhythm, sequence, symphony of natural systems. Instead of burdening the present article with these intricacies, let us briefly state here that the addition of chemical fertiliser detracts from the beneficial effects of organic manure, and causes harm, in the following ways:

a) Application of chemical fertiliser over and above organic manure is likely to produce an excess of nitrogen and even of phosphate. An excess of any element causes damage. In the case of nitrogen, we have earlier stated that its excess leads to dilation of cells, diminution of flowering, and weakened resistance against diseases. Excess of phosphate, beside polluting water, does other kinds of damages. Thus, the addition of chemical fertiliser is both a waste of resource and an invitation to injury. The injury is reflected in (i) lesser yield in the total food package from the overall husbanding of the given land; and, (ii) loss in nutritive quality.

b) Whereas organic manure consists of 30-40 elements of very minute strength, the chemical fertiliser contains only five or six selected elements in high concentrations, in the form of compounds.. This results in an increase in the density of salt in the soil solutions, which means difficulty in water absorption by plants. This becomes more evident in rabi (winter) crops. In kharif (i.e. rainy season) crops, the problem gets largely resolved by washout of salts. So, there has to be either washout i.e. wastage, or the plants have difficulty in water absorption.

But there is an even more serious problem. Non-tailored plants are not able to withstand frequent shocks through osmotic pressure variations resulting from repeated fluctuations in salt density in the solution; only the weeds are. Hence any use of chemical fertiliser prepares the ground for take over by weeds. Of course, tailored plants like the 'high yielding varieties' are designed to take these shocks. But there, too, Nature takes revenge by making these varieties pest-prone and obsolete every three to five years.

c) It disturbs the entire micro-flora and micro-fauna of the soil.

It de-activates and even kills the nitrogen fixing bacteria and decimates all those bacteria which fix sulphur, iron, carbon, hydrogen, etc., in their own bodies initially and contribute these elements to the soil organic matter while dying. When these bacteria are thrown into disarray, the disease producing bacteria thrive on account of the disproportion of salts.

d) The use of chemical fertilisers, even in the presence of organic manure, upsets the sequence of decompositions, and hence both the successional order and the balance of micro-organismic populations. Different types of organisms are endowed with different functions and follow a line of succession relevant to the changing character of the substrata. In a natural system, there are many species of micro-organisms at any time. They assimilate carbon gradually. In their death they contribute to the organic matter to nourish the succeeding generations. But when the concentration of certain elements is selectively and artificially increased, it encourages excessive multiplication and overactivity of certain types of bacteria which are relevant to these salts. At the same time, it de-activates and kills the more useful types of bacteria. Thus, two distinct developments take place. The latter (i.e. the more useful) types of bacteria die without doing their job and without getting a chance to multiply. The former types decompose and deplete the organic matter too fast, preventing its long term function.

e) The use of chemical fertiliser, even with organic manure, affects both the physical and chemical structure of the soil. Apart from causing a loss of natural nutrients, it results in a loss of tilth and water holding capacity, which opens up a vast panorama of serious consequences. All the benefits of aeration and moisture retention and hence all the biological processes which are based on soil water and air, tend to get reduced and ultimately evaporate. Along with these, the plants' strength to draw the nutrients diminishes. By shutting out the natural nitrogen, these processes keep on raising the need for chemicals and at the same time keep on decreasing the soil's capacity for their absorption.

f) The higher-than-normal concentration in the soil of the selected salts affects the balance in micro-elements which is extremely important for plant health. These compounds set off a chain of recombinations with other forms of salts. As a result, certain ions get themselves attached to soil particles by knocking off certain others. The knocked-off elements get leached out of the soil. This may mean toxicity caused by the excess of certain elements and shortages of certain other elements. Also, as a result of new combinations, certain elements become insoluble and unavailable to plants.

g) Whereas an organic mass generally maintains balance of trace elements, the addition of chemicals affects this balance. This is because many of these micro elements are sensitive to large changes in the concentration of cations. For example, when ammonium ions are too high in relation to potassium, the plant tissues are likely to get killed. Excess of phosphate on calcareous soils may lead to zinc deficiency. Ammonium sulphate may leach out calcium. When calcium gets depleted, the species of legumes which are calcium-demanding will not grow. Use of ammonium sulphate increases magnesium availability and hence the possibility of magnesium toxicity on acidic soil. High sulphate availability may cause copper deficiency. Calcium can pick up phosphate from sodium and potassium and immobilise it. If potassium sulphate and calcium nitrate happen to be added at about the same time, this will create calcium sulphate which is insoluble. Chemical compounds generally tend to make iron, manganese, boron insoluble.

h) There is the phenomenon of antagonism between salts. If we put phosphate and also iron or calcium, it will antagonise the absorption of phosphate with calcium/iron. The phenomenon of ionic competition for diffusion into the plant body further complicates the situation. If sodium and calcium happen to be equivalent to potassium in concentration, the sodium/calcium will prevent the entry of potassium into the plant body.

There is a kind of harmonious relationship between the soil, plant and the microbial population. Application of chemical fertiliser, even with organic manuring, means disturbance to the harmony.

Sailen Ghosh

Nature's Methods of Soil Management

This beautiful essay was written by Sir Albert Howard and appears as the first chapter of his book, An Agricultural Testament. In it the distinguished organic farmer-scientist provides a wise understanding of the way nature farms and how best we can learn from such practices.

Little or no consideration is paid in the literature of agriculture to the means by which Nature manages land and conducts her water culture. Nevertheless, these natural methods of soil management must form the basis of all our studies of soil fertility.

What are the main principles underlying Nature's agriculture? These can most easily be seen in operation in our woods and forests.

Mixed farming is the rule: plants are always found with animals: many species of plants and of animals all live together. In the forest every form of animal life, from mammals to the simplest invertebrates, occurs. The vegetable kingdom exhibits a similar range: there is never any attempt at monoculture: mixed crops and mixed farming are the rule.

The soil is always protected from the direct action of sun, rain, and wind. In this care of the soil strict economy is the watchword: nothing is lost. The whole of the energy of sunlight is made use of by the foliage of the forest canopy and of the undergrowth. The leaves also break up the rainfall into fine spray so that it can be more easily dealt with by the litter of plant and animal remains which provide the last line of defence of the precious soil. These methods of protection, so effective in dealing with sun and rain, also reduce the power of the strongest winds to a gentle air current.

The rainfall in particular is carefully conserved. A large portion is retained in the surface soil: the excess is gently transferred to the subsoil and in due course to the streams and rivers. The fine spray created by the foliage is transformed by the protective ground litter into thin films of water which move slowly downwards, first into the humus layer and then into the soil and subsoil. These latter have been made porous in two ways: by the creation of a well-marked crumb structure and by a network of drainage and aeration channels made by earthworms and other burrowing animals. The pore space of the forest soil is at its maximum so that there is a large internal soil surface over which the thin films of water can creep. There is also ample humus for the direct absorption of moisture. The excess drains away slowly by way of the subsoil. There is remarkably little run-off, even from the primeval rainforest. When this occurs it is practically clear water. Hardly any soil is removed. Nothing in the nature of soil erosion occurs. The streams and rivers in forest areas are always perennial because of the vast quantity of water in slow transit between the rainstorms and the sea. There is therefore little or no drought in forest areas because so much of the rainfall is retained exactly where it is needed. There is no waste anywhere.

The forest manures itself. It makes its own humus and supplies itself with minerals. If we watch a piece of woodland we find that a gentle accumulation of mixed vegetable and animal residues is constantly taking place on the ground and that these wastes are being converted by fungi and bacteria into humus. The processes involved in the early stages of this transformation depend throughout on oxidation: afterwards they take place in the absence of air. They are sanitary. There is no nuisance of any kind – no smell, no flies, no dustbins, no incinerators, no artificial sewage system, no water-borne diseases, no town councils, and no rates. On the contrary, the forest affords a place for the ideal summer holiday: sufficient shade and an abundance of pure fresh air. Nevertheless, all over the surface of the woods the conversion of vegetable and animal wastes into humus is never so rapid and so intense as during the holiday months – July to September.

The mineral matter needed by the trees and the undergrowth is obtained from the subsoil. This is collected in dilute solution in water by the deeper roots, which also help in anchoring the trees. Even in soils markedly deficient in phosphorus, trees have no difficulty in obtaining ample supplies of this element. Potash, phosphate, and other minerals are always collected in situ and carried by the transpiration current for use in the green leaves. Afterwards they are either used in growth or deposited on the floor of the forest in the form of vegetable waste – one of the constituents needed in the synthesis of humus. This humus is again utilized by the roots of the trees. Nature's farming, as seen in the forest, is characterized by two things: (1) a constant circulation of the mineral matter absorbed by the trees; (2) a constant addition of new mineral matter from the vast reserves held in the subsoil. There is therefore no need to add phosphates: there is no necessity for more potash salts. No mineral deficiencies of any kind occur. The supply of all the manure needed is automatic and is provided either by humus or by the soil. There is a natural division of the subject into organic and inorganic. Humus provides the organic manure; the soil the mineral matter.

The soil always carries a large fertility reserve. There is no hand to mouth existence about Nature's farming. The reserves are carried in the upper layers of the soil in the form of humus. Yet any useless accumulation of humus is avoided because it is automatically mingled with the upper soil by the activities of burrowing animals such as earthworms and insects. The extent of this enormous reserve is only realized when the trees are cut down and the virgin land is used for agriculture. When plants like tea, coffee, rubber, and bananas are grown on recently cleared land, good crops can be raised without manure for ten years or more. Like all good administrators, therefore, Nature carries strong liquid reserves effectively invested. There is no squandering of these reserves to be seen anywhere.

The crops and livestock look after themselves. Nature has never found it necessary to design the equivalent of the spraying machine and the poison spray for the control of insect and fungous pests. There is nothing in the nature of vaccines and serums for the protection of the livestock. It is true that all kinds of diseases are to be found here and there among the plants and animals of the forest, but these never assume large proportions. The principle followed is that the plants and animals can very well protect themselves even when such things as parasites are to be found in their midst. Nature's rule in these matters is to live and let live.

If we study the prairie and the ocean we find that similar principles are followed. The grass carpet deals with the rainfall very much as the forest does. There is little or no soil erosion: the run-off is practically clear water. Humus is again stored in the upper soil. The best of the grassland areas of North America carried a mixed herbage which maintained vast herds of bison. No veterinary service was in existence for keeping these animals alive. When brought into cultivation by the early settlers, so great was the store of fertility that these prairie soils yielded heavy crops of wheat for many years without livestock and without manure.

In lakes, rivers, and the sea mixed farming is again the rule: a great variety of plants and animals are found living together: nowhere does one find monoculture. The vegetable and animal wastes are again dealt with by effective methods. Nothing is wasted. Humus again plays an important part and is found everywhere in solution, in suspension, and in the deposits of mud. The sea, like the forest and the prairie, manures itself.

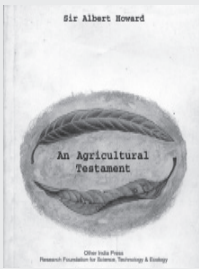
The main characteristic of Nature's farming can therefore be summed up in a few words. Mother earth never attempts to farm without livestock; she always raises mixed crops; great pains are taken to preserve the soil and to prevent erosion; the mixed vegetable and animal wastes are converted into humus; there is no waste; the processes of growth and the processes of decay balance one another; ample provision is made to maintain large reserves of fertility; the greatest care is taken to store the rainfall; both plants and animals are left to protect themselves against disease. (Taken from *An Agricultural Testament*, pp.1-4).

Albert Howard

Books by Albert Howard

An Agricultural Testament

By Albert Howard


Sir Albert Howard
An Agricultural Testament
Other India Press
Research Foundation for Science, Technology & Ecology

Pp. 272 (2008)
Rs. 250
Available from OIB

Albert Howard's book was unavailable for several years. It is now kept in print by Other India Press.

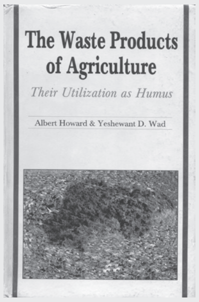
Howard was the antithesis of the Liebig tradition – which reduced all plant nutrition to NPK and its replenishment at regular intervals, earthworms and other microfauna and flora be damned. In both his theories and his practical work, he brought back the importance of micro-organisms and fungi in the soil and their critical role in the nutrition of plants.

Howard was the first to point out that the forest – the world's largest producer of biomass – did not receive artificial fertilizers from any human agency. It was therefore necessary to examine how forests functioned so that we could use nature's insights rather than trying to substitute for them.

He pointed out that the forests did not know the problem of pests either.

A major classic on organic farming.

The Waste Products of Agriculture – Their utilization as humus


The Waste Products of Agriculture
Their Utilization as Humus
Albert Howard & Yeshewant D. Wad

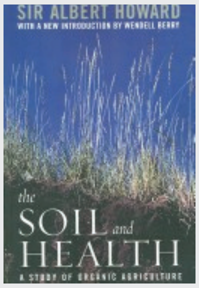
By Albert Howard & Yeshwant D. Wad

Pp. 160
Rs. 395

The present work provides a clear summary of the various agricultural systems of East and West. It next goes into the formation of soil humus as a result of activities of micro-organisms. This is followed by a very careful and detailed step by step account of the manufacture of compost by the Indore method.

'One of the main features of crop production at the present day is waste. Except in the Far East, where the large indigenous population has to be fed from the produce of the country-side, little is being done to utilize completely the by-products of the farm in maintaining the fertility of the soil. The ever-growing supplies of agricultural produce, needed by industry and trade, have been provided either by taking up new land or by the purchase of artificial manures. Both these methods are uneconomic. The exploitation of virgin soil is a form of plunder.'

Soil and Health


SIR ALBERT HOWARD
WITH A NEW INTRODUCTION BY WENDELL BERRY
the SOIL and HEALTH
A STUDY OF ORGANIC AGRICULTURE

By Sir Albert Howard / Wendell Berry

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Published in 1945, just before agricultural corporations surged to global proportions, this work is a major inspiration to the organic and sustainable farming movement. and a thought-provoking reminder of a road not taken in developing mainstream agriculture during the past half-century.

The central tenet of Howard's philosophy is that healthy soil, vegetation, animals, and humans are connected and that undernourishment of soil is the source of modern agricultural and health problems. In Howard's estimation, heavy reliance on chemical fertilizers will ultimately lead to widespread disease and destruction of vibrant communities. As the environmental and social consequences of industrial farming are being hotly debated, *Soil and Health* remains vital to understanding what is at stake in the battle between chemical and organic farming.

For free downloads of all Howard's books and articles, go to: http://www.journeytoforever.org/farm_library/howard.html

Soil, Biology and Working with Plants

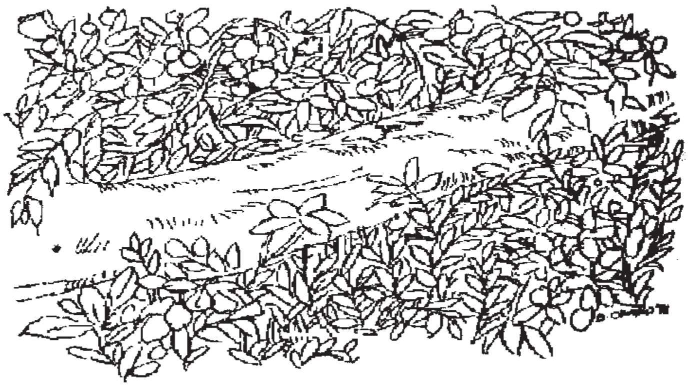
By Claude Bourguignon

Claude Bourguignon gave this scintillating talk on his work with plants and tropical agriculture at the ARISE conference in organic farming in April 1995. The lecture is given here without the questions/answers that concluded it. These are included in a new volume published by the Other India Press (Regenerating the Soil). Claude Bourguignon is a soil biologist. He worked for more than a decade at the French Centre for Research in Agronomy and also at the University of California, USA. He has started, with his wife, a private laboratory for soil analysis, and works all around the world.

Throughout the world we can observe a big increase in the erosion of agricultural soils. The problem is serious because there are now a lot of people on this planet. To give you an idea, the earth's area is 15 billion ha., we are 5 billion people, which means we have only 3 ha. per inhabitant. Of this 3 ha. only a quarter ha. is cultivable. The rest is impossible to cultivate because it is either too dry or too cold, too wet or the slope is too steep. A quarter of a ha. per individual is not a lot. The truth is that we are running out of space! This is the first time that humanity is in such a situation. We have virtually no place for any more people! The times of the Far West, when people could colonize new lands, are gone. We have, therefore, no other choice but to learn to manage and take care of what we have.

I remember the saying of Sir Francis Bacon, the founder of experimental science, who said that, if you want to know nature, first of all start to abide by nature. And why must we follow the rules of nature? Because the natural world has been in existence since millennia. The equatorial system, for instance, the Amazonian or the Borneo forest, by the estimation of palaeontologists, has existed since 30 to 60 million years. A system which has lasted out for so long has proved that it is truly perennial. We, humans, have been cultivating the earth only since 8000 years and so must try not to be too arrogant. We must accept that nature's ways are more efficient than ours. We must learn from nature and follow her example to develop a system of agriculture that is perennial. I will speak to you today about soils, specifically on the topic of biology and try to present a rough framework for agricultural production along perennial lines.

What I now propose to do is to take you on a travel from the poles, the north or the south poles, to the equator and do a very simple thing: just look at the depth of the natural soil. I mean soil under virgin forest or wild vegetation. It is very rare now to find soil under a wild system because humanity has destroyed more than 70 percent of the forests of the world. However there still exist on earth some places, as yet untouched by human destruction, where you can observe soil under natural conditions. So if you go from the North or South pole towards the equator, what you see is that the soil depth varies greatly. There is no soil on the poles. Why so? Because there is no vegetation; and there is no vegetation because it is too cold. There are only rocks. On these rocks you will find lichens, very simple plants, that just cover the surface of the rocks (but no soil). Moving southwards, when you reach the forest of pines in Siberia and Canada, what we call the Taiga, the depth of the soil increases. Then in temperate countries, the depth of the soil reaches a maximum of 10 m. When you come to the desert belt around the world, the soil vanishes because it is too dry. There is no vegetation, no soil; you are directly on the rock. This rock could either be sand or direct rock, but there is no soil. Still further south, the deepest soil of the earth lies under the equatorial forest, between 30 and 40 m. deep. So what is observed is very clear. The depth of the soil is not uniform wherever you go. This strongly suggests that we must accordingly, develop different agricultural practices to suit varying natural conditions. What we are actually doing is precisely the opposite. We follow exactly the same agricultural practices on soils with very different dynamics.



Claude Bourguignon

Now we can look at the height of the vegetation over the globe. On the poles there is no vegetation. Then the virgin forests of temperate countries are about 40 m. high. In the deserts there is no more vegetation. Lastly you reach the equatorial forests where you have the highest forests of the world, about 80 m. high. There is a very strong correlation between the depth of the soil and the height of the vegetation. The higher the vegetation, the deeper the soil. This is due to the fact that vegetation creates soil. The soil is but a pure creation by life and that is why there is no soil on the other planets. On Mars, or Venus or Mercury, you don't find soil, you just find rocks, and this is because there is no vegetation. Without vegetation there is no possibility for soil to form.

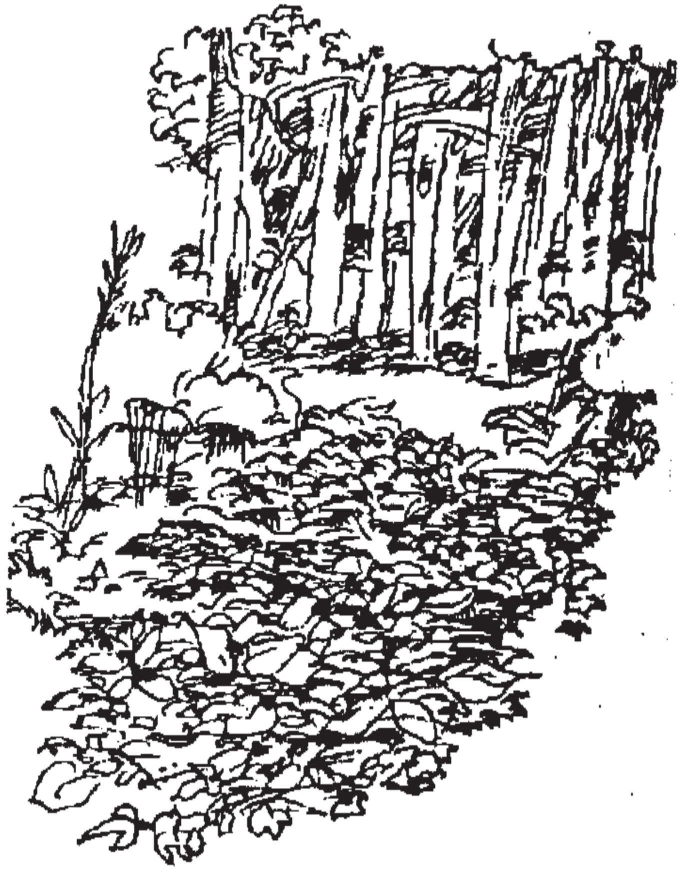
Another revealing fact is the chemical composition of the soil. In temperate regions, the soils have a high cation exchange capacity but if you go towards the south, in tropical countries, the cation exchange capacity is very low. It is really surprising that the poorest soil of the world supports the tallest vegetation! What the agronomists, however, conclude is that good production of food in tropical countries is impossible because there is nothing in the soil. So they decide to put in a lot of fertilizers in tropical soils, but this costs a lot of money. On the contrary, what we must do first of all is to understand how the highest plants of the world are able to grow on the poorest soils. If the soil is poor and if the vegetation is tall and lush, it simply suggests that fertility must be traced not to the soil but to another source.

Let us look at how the soil creates an exchange capacity. To create an exchange capacity you must have two things – clay and humic acid. Clay comes from the transformation of rocks by plants. Plants attack the rocks and produce clay. Insects and animals attack leaves and the rest of the vegetation and produce humic acid. It is the blending of clay and humic acid that produces cation exchange capacity. In tropical systems you find very bad clay and very little organic matter in the soils. This is because 90% of the organic matter is present in the vegetative canopy of the forest, with only 10% within the soil. In temperate countries, on the other hand, 60% of the organic matter, occurs within the soil and only 40% is in the vegetation. These soils are thus very rich. Such soils are able to hold and maintain fertilizers if they are added, whereas in tropical countries fertilizers would be lixiviated (leached) very fast.

The lesson to be learnt is to follow what happens in the forest and do what the forest does. Instead of maintaining its nutrients within the soil, the forest channels them into the trees. This is made possible by deep root systems. Trees of the tropical forests have the deepest roots in the world. Such an efficient system of roots is absolutely essential in order to prevent loss of elements by lixiviation. This is especially so in equatorial and tropical countries with high rainfall of between 3 and 10 m. Imagine the state of the Amazonian forest, for instance, if it were to lose 1% of its nutrients every year! It would be impossible for it to sustain itself if it lost its elements. The fact to be noted is that forests lose absolutely nothing. They maintain everything by a very efficient recycling of elements from roots to the top of the trees. So if you examine the soil for nutrients you will find nothing. You must study the elements in the forest cover.

The expansion of modern agriculture is normally preceded by the burning of forests. This means putting all organic matter into mineral form. With the onset of the rains all the nutrients are lixiviated and nothing remains. Erosion begins immediately and you lose your soil. The worst thing you can do in equatorial and tropical countries is to use the burning system to cultivate because you then immediately expose your elements to lixiviation, especially with the high rainfall. The first thing to do when you want to transform a wild forest of an equatorial country into agricultural area, is to avoid burning organic matter. The correct way to proceed is to just cut the trees, keep the trunks for use, keep all the leaves and all the organic matter on the soil. Then you must directly sow in this organic residue. In tropical countries, you must develop what we call the 'non tillage' process. In the temperate countries the inverse is recommended. In the north, tillage is necessary in order to aerate the soil because the turnover of organic matter is extremely slow. As you go towards the south, you must use the non tillage process because organic matter goes so quickly into the living system. We will now see how a non tillage process can be adopted in tropical countries to develop a system of agriculture which is perennial.

There is no sense in using chemical fertilizers because they are sure to get lixiviated. We then have two possibilities. If you start from a wild system, you have a rich supply of elements in the forest cover. I have made measurements in the Amazonian Forest in Brazil and found, in the forest cover, more than one ton of Nitrogen per ha., more than 800 kg of Potassium, more than 600 kg of Phosphorus, and 500 kg of Magnesium per ha.. If you examine the soil, on the other hand, you find absolutely nothing – just about 0.1 ppm of Potassium, 0.01 ppm of Phosphorus and likewise. This would imply that it is impossible to start agriculture. The fact, however, is that all the nutrients are present in the foliage, in the trees and not in the soil. So in the non tillage system, we cut down the forest, then we make a direct sowing of what we call a 'pump plant.' In Brazil we use plants which are able to grow at the speed of 5 cm per day for roots, and 5 m. in 60 days for the stem. In this way we are able to produce 90 tons of organic matter in 60 days. Afterwards the pump plant is destroyed and in this organic matter we start to sow paddy. We use a machine which is able to sow directly into the organic matter. So we sow the paddy in 90 tons of organic matter. We use rainfed paddy in Brazil because there is no possibility of irrigation. With this system, we start to produce 2 tons of paddy per ha. and reach, within 3 years, a production of 5 tons per ha., without fertilizer.



What is very delicate is to get the time factor right for sowing (within 6 days after the start of the rainfall). If you wait for one month, like a lot of people do in tropical countries, for the soil to get moist enough before they start to sow, you lose the start of the rainy season. What happens then is that the mineralization of organic matter starts very fast. I have measured, a week after the first rainfall, the biological activity doubles – just within one week! So if you wait too long, all organic matter is rapidly mineralized by microbes, all the nutrients go very deep in the soil and when your seed sprouts, it has no time to chase the elements which are quickly leaching away. You must therefore be extremely careful about when you sow your seed. After the paddy crop is harvested, in Brazil, you again have a dry season. During this period you must sow a 'pump' plant which is adapted to grow with only 300 mm. of rain in order to avoid leaving the soil uncovered in the dry season. An exposed soil during the dry season will kill all the biological activity. So, during the last week of the rains, you should sow a pump plant. Then the same cycle is to be maintained – you sow paddy or soya bean and so on. Every time you produce a crop, the role of the pump plant is to absorb, very quickly, all the elements which are otherwise exposed to lixiviation after the harvest. This is possible by the special ability of the pump plant to penetrate the soil very, very quickly. In Brazil, from 90 tons of pump plant we have obtained, in organic form, 200 kg of Nitrogen per ha., 150 kg of Potassium per ha., 90 kg of Phosphorus and 60 kg of Magnesium. We thus try to create a sort of copy of the forest.

When you start from an eroded soil, it is a different situation. You have nothing in your soil, all the nutrients have been lixiviated. The soil is absolutely destroyed.. It is impossible to start agriculture directly without putting in something. You cannot possibly plant a forest, wait for it to grow, and then cut it down before starting agriculture. This takes too long. In such a situation we are absolutely obliged to add fertilizers in order to get the organic system going. But what sort of fertilizers? We use the most stable fertilizers available in the market. For instance, for nitrogen we use Urate (sodium) for phosphorus we use natural phosphate (calcium phosphate), for potassium we use silicate potassium (a very strong form of potassium), for magnesium we use dolomite (a carbonate of Magnesium), for calcium we use lime stone. We are obliged to bring in these very stable forms of fertilizer and then we produce a pump plant. After this we can start the same process again – paddy, pump plant...and so on. By this very simple system of using a pump plant we can avoid strong lixiviation which is the problem with all tropical soils. Generally, on an eroded soil, to create a porosity we are obliged to plough the soil very deeply once, for establishing the pump plant.

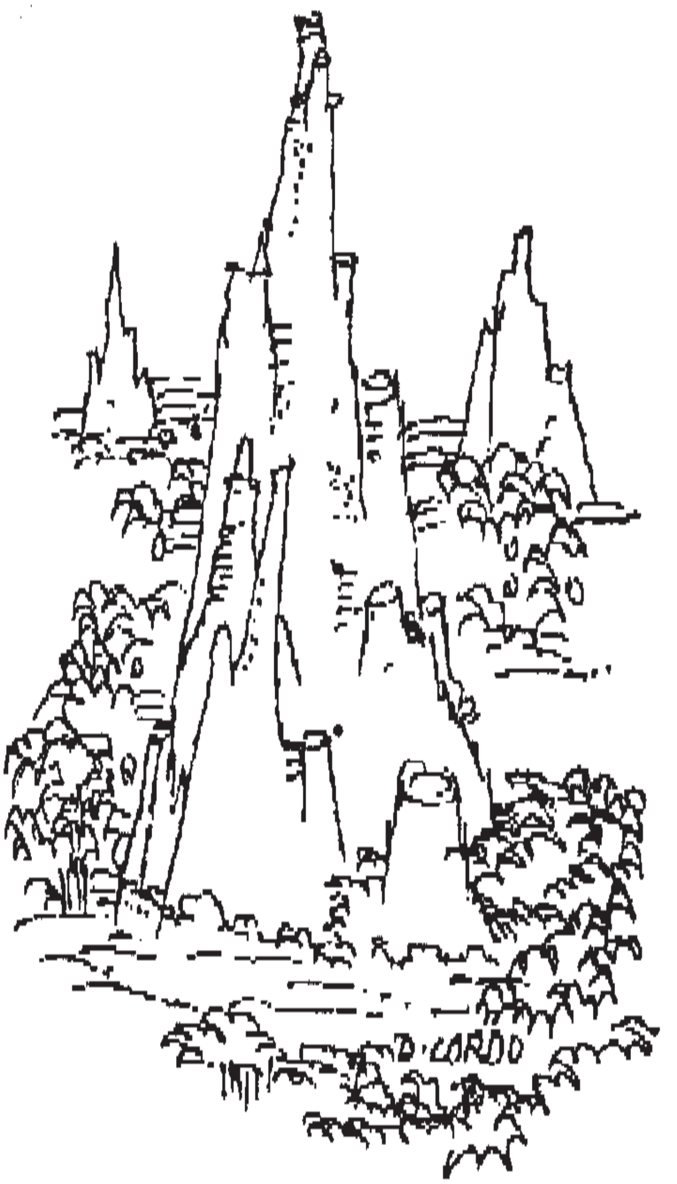
What we must understand is why this system is so efficient? How is it possible to produce 5 tons of paddy with this system? It is a fact that if we compare the biological activity within this system with the conventional, chemical system, there are considerable differences. I have made comparisons between the wild forest in Brazil, the modern, intensive, chemical agriculture and the pump plant system and found that in the pump plant system there is half the biological activity of the forest while in the chemical system there is only one tenth. With the pump plant system we are approaching the equilibrium of the forest. We have so far only 3 years of experimentation behind us. Probably after 3 to 5 years we will be obliged to put in a minimum of fertilizer because it is impossible to obtain zero lixiviation under any harvest system.

I am quite sure that with this system, we can protect our environment more efficiently than with the conventional system which actually destroys the soil. This is because, when you put organic matter on tropical and equatorial soils it invites a good development of soil fauna. In fact, the total of the porosity of the soil is created by the soil fauna. In equatorial countries, this is specifically the result of termite activity to a great extent and worms to a lesser extent. Worms are very important in temperate counties or in Mediterranean areas. For termites to survive they need organic matter for food. If there is no organic matter on the soil the termites disappear, the porosity of the soil consequently vanishes and when there is strong rainfall it is unable to permeate the soil. The rainfall being very strong in tropical and equatorial countries, there is a difference between the intensity of the rainfall and speed of the movement of water in the soil. If the soil is unable to absorb all the water it immediately causes saturation and the topmost part of the soil is washed off with the water. I have made comparisons in Brazil between forest systems, with cultivated systems, and found that the speed of water inside the soil is 100 times higher in the Amazonian forests than under the cultivated system. It is not a difference of merely 10 or 20 % but 100 times better! The porosity of the soil of the Amazonian forest is 80 %. This means that you have 80 % of porosity (vacuum) and only 20 % of sand and clay. In fact in Amazonia and Congo the soil is composed of 80% clay. With a high level of clay, the soil would normally be extremely compact but because of the activity of soil fauna the porosity level is as high as 80 %. I remember a day in Amazonia when we had a rainfall of 500 mm with a peak of 150 mm. in one hour and it was extraordinary to walk on a forest floor that was not even slightly water-logged or slushy! In cultivated areas such rainfall would definitely have brought about strong erosion. If you fly over the Amazonian forest, all the places where man has followed bad cultivation practices are clearly visible by the orange colour of the rivers. On the other hand in a wild system you have absolutely transparent water because the system is without erosion. Fauna is thus extremely important especially in tropical countries. You must develop soil fauna.

I have studied the microscopy of soil from a tropical system and examined porosity due to termites. What is extremely interesting is the fact that in the Amazon all the soil upto a total depth of 30-40 m is made by termites. The excrement of termites is extremely solid, resistant to erosion and builds up the soil year after year. Soil is after all a biological system. If you have no fauna you are sure to have erosion . This is exactly what can be observed in Europe which is facing a strong problem of erosion. During the 70s, in Europe, we were losing 20 tons of soil per ha. per year, but now the loss is 40 tons per ha. per year. We have doubled our erosion. This is because we have lost our soil fauna. The normal population of worms in Europe should be between 1 and 3 tons per ha., but what we actually find in an intensive agricultural system is only 100 kg. Consequently the soil is not aerated and when it rains we have strong erosion. All the rivers of Europe, which once carried clear and transparent water, are now turbid.

A worm eats its own weight every day. If you have 3 tons of worms per ha., they would eat 3 tons of soil every day. In a year they would eat 1000 tons of soil. That means 10 cms. of soil moves through the worms' system. They produce extensive galleries. A big worm, in Europe for instance, produces 5000 km of galleries per year and the little worms between 100 and 300 million km per ha. per year. This is because the little worms eat dead roots, replace them with air, thus creating porosity and enabling water to percolate. The importance of soil fauna has been underestimated. There are very few people who have studied termites, for instance. We must understand that without fauna it is impossible for water and for gases to penetrate the soil. The less the soil fauna, the more exposed is your system to erosion. We must develop ways to build up fauna and the pump plant is an extremely efficient method for developing fauna in your soil. The more you have fauna the better will be your soil.

Soil fauna is not only important for water circulation but is also important for oxygen which is necessary in the soil because plants can assimilate only oxidized forms of certain elements. For instance, nitrogen is not assimilable by plants as ammonia but as nitrate, sulfur as sulfate, phosphorus as phosphates. These transformations are done by microbes. Oligo elements which are not soluble in oxidized form are transformed by microbes through a process known as chelation into forms which are assimilable by plants. For e.g. microbes convert iron, using organic acids, into what is called a 'chelate' which is an acid form of iron. So if you want microbes to produce nitrates, sulfates, phosphates or chelates of oligo elements, you need oxygen and only fauna can bring oxygen into the soil.



If you have no oxygen in the soil because you have destroyed your fauna by a lack of organic matter or by an excess of pesticides, an inverse reaction takes place. Badly aerated soils lead to the development of anaerobic microbes which, in fact, transform nitrates back into Ammonia, sulfates into sulfur and phosphates back to phosphorus. With this depletion there is no possibility for plants to grow and the use of fertilizers then becomes obligatory. Of course, the industries produce nitrates, sulfates and phosphates but these come with a price. In nature, on the other hand, as products of biological reactions, they are absolutely free. You pay nothing for them.

There is thus, a complete system operating: you have soil containing clay and humus (which means exchange capacity), you have microbes which produce nitrates and other nutrients, and fauna for producing galleries which aid the free flow of water and oxygen. It is only the undisturbed functioning of all these components that ensures good production and a perennial system of agriculture. By just adding fertilizers you cannot hope for a perennial system. On the contrary it leads to erosion and you are more likely to lose your soil. Incidentally, the desert area of the world is increasing at a rate of 20 million ha. per year. At the beginning of the century, deserts were spread over 20 % of the earth, but now they cover more than 30 % and are increasing rapidly.

I will now talk about how plants feed in the soil, and how is it that incredibly large trees can grow on the poor soils of the tropics and the equator.

Firstly, we do not realize that plants don't primarily feed in the soil but in the atmosphere. If we look at the nutrition of plants we find that soil is the source of only 5% of the dry matter of plants. It is the atmosphere which provides the main part of the food that plants need. It is therefore not necessary to use fertilizers simply because plants need very little from the soil. The atmosphere is the source of 95 % of the dry weight of plants, comprising only 3 elements – Carbon, Oxygen and Hydrogen. So the bulk nutrition of plants (95%) comes from the atmosphere. We generally believe that the greater part of the plants' nutrition is derived from the soil, but it does not come from the soil, it comes from the air. This is why tropical countries have the best productive potential of the world. You get more sun than Europe and therefore must have higher yields than in northern countries, because the sun is responsible (through photosynthesis) for 95 % of the dry weight of plants

Of the 95% that a plant takes from the atmosphere (to build up its dry weight), Carbon constitutes 44 %, Oxygen 44% and Hydrogen constitutes 6%. Carbon and Oxygen come from Carbon dioxide which is transformed by photosynthesis in sugar (sugar represented by cellulose, lignin and by all the different plant sugars). It is not necessary to do anything to bring Carbon dioxide in the atmosphere because this comes by very normal processes. If the sun shines bright and people respire as they always did, to grow plants should not be a problem! In fact the industry which produces a lot of carbon dioxide by burning petrol and coal, could actually bring a huge increase in yield! It is generally believed that the increase in world temperatures is due to an increase in carbon dioxide emission. This is not so. The problem is more a result of increased desertification – the growth of areas where no photosynthesis takes place any more. Every year 20 million ha. of land are lost to expanding deserts. The problem of the increase in world temperatures is thus directly connected to desertification and not to cars or to the industry.

There is a legend in France, told by Jean de la Fontaine, which tells the story of animals attacked by the plague. The lion, the king of animals, calls for a meeting to discuss the crisis. Addressing the gathering, he asks, 'Who is responsible for this plague?' In reply, the elephant says, 'I'm not responsible,' the crocodile says, 'I'm not responsible,' and likewise every animal denies responsibility. Towards the end they see a poor donkey, pounce on him, accuse him of being the culprit and decide to kill him! This is exactly what we actually do! We blame the cars for the destruction of our atmosphere. This is absurd because the actual reason is that we destroy our vegetation.

To come back to plant constituents, as mentioned earlier, hydrogen forms 6% of a plant's dry weight. Hydrogen is, in fact, the most common of all elements and constitutes 95% of the whole universe. It is however very light. Twelve hydrogen atoms are equivalent, in weight, to only 1 of carbon. Owing to its lightness, it represents only 6% of the weight of plants and it is derived from water. During photosynthesis, water is transformed into hydrogen which is used for sugar production and oxygen which is used for respiration. So, in fact, by adding absolutely nothing, 95% of a plant is produced simply by being exposed to the atmosphere. To build up 95 % of its dry weight, a plant just opens its leaves in the direction of the sun.. If you see it this way, there is a lot of hope in agricultural production.

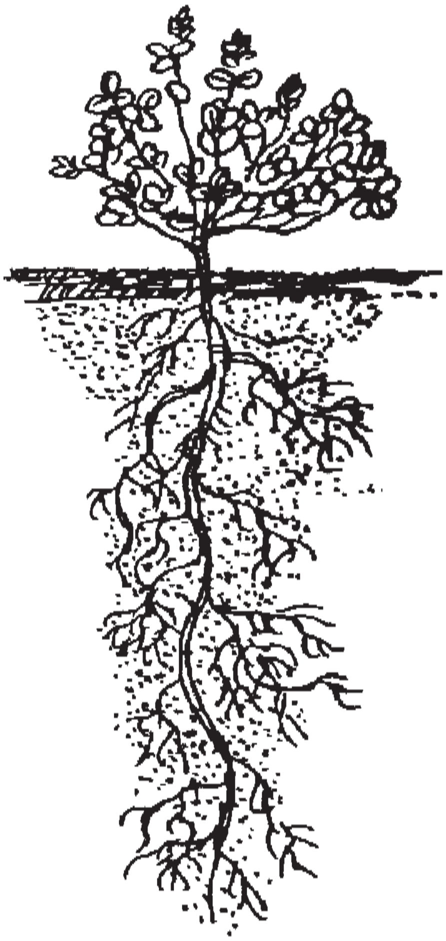
A fresh plant, however, contains 80% water, which is absorbed through the roots. This implies that in dry countries plants cannot survive. Although some soils of the Sahara, the sierozems , for instance, are very rich, they cannot support any vegetation because of the lack of water. The limiting factor here is not soil, but water. Life needs water. This need for water is, of course, only during the production of the plant. The seed contains only 15%-20% water. Once the grain is harvested, the rest of the water is re-cycled back into the living system.

To get the remaining 5% from the soil, the plant has to exercise much more. For the plant it is more difficult to take this 5% from the soil than to take 95% of elements from the atmosphere. It is obliged to produce a lot of roots to feed in the soil. To give you an idea, if you take just one wheat plant, the area that is exposed to the sun – the area of the stem and leaves – is 5 sq.mts. but if you measure the area of the roots, it is 1000 sq.mts.! It takes 5 sq.mts. to produce 95% but 1000 sq.mts. to produce 5%! The roots of just one plant of Rye extend upto 400 km and this is made in 6 months! Roots are a fantastic phenomenon. We tend to overlook the importance of roots. We haven't studied them well enough. As humans, we have the peculiar limitation of receiving more that 90% of our information through the eyes. We notice and regard as important, only what we can see. We cannot see roots. It is beyond our senses to identify 400 km of roots within the soil and so we consider roots to be unimportant. In France the deepest roots we have measured are under a cherry tree and extend upto 150 m. deep. This means that trees always go directly after the deep water. They don't care much about dry soil conditions. For such studies we take the help of people who are specialized in exploring the underground. They use special lights and trace the depth of the roots which we eventually identify.

The problem plants face in feeding from the soil is that they can only take elements in a solution. This is actually the big source of problems for plants. They can absorb elements only if they are in a solution of water. This means that they are forced to fight a physical law – the law of concentration. The law of concentration states that in each part of a living cell there is a tendency to maintain an equivalence of concentration inside the cell with the solution outside the cell. This means that if, for e.g., a plant needs a substance like nitrate, it would only be able to get negligible amounts of it, in proportion to the low concentration of nitrates present in the soil. It is impossible for plants to accept the law of concentration. They must fight against it. This is in fact, the characteristic of all life. All mammals do the same. All living organisms do the same. You do the same too. Plants overcome the physical law of concentration by a very intelligent system. They create an electric force. I will explain how they do this.

It is known that the earth is composed of 106 known atoms which physicists have classified. The first category (in the Periodic Table), mono-atomic cations, are atoms with a positive charge, like hydrogen, lithium, sodium, potassium, and so on. The living system takes these elements directly, in atomic form, and retains them inside the clay-humus complex, as what is called the Cation Exchange Capacity of the soil. These elements are retained in the soil because the clay-humus blending has a lot of negative charge, thereby allowing elements with a positive charge to be attracted and held. By this process, acidic soils retain a lot of hydrogen, while basic soils hold a lot of potassium, sodium, calcium, magnesium, and so on. After this what do plants do? If you put a micro-electrode through the membrane of a plant cell you will cross a portion of the cell which has a plus charge and then reach the inner part which has a minus charge. This plus charge is taken from the soil (from the clay-humus complex) and brought into the cell membrane by a very intricate process. Plants have to expend a lot of energy for this. By photosynthesis, they send sugar by the decreasing sap in the direction of the roots. With this energy of sugar they produce a lot of what is called ATP – Adenosine Tri Phosphate which, in turn, plays a major role in the uptake of positively charged elements. When the membrane is thus suffused with a positive charge, the plants then wait for microbes to produce nutrients with a minus charge. Normally nitrate will never enter the cell owing to its very low concentration in the soil. But now, because nitrate is negative and the cell membrane is positive, this electric force draws the nitrate towards the plant cell membrane. Then, by means of a selective transporter the nitrate is absorbed inside the cell. By this extremely clever system, the plant manages to absorb nutrients like nitrates, sulfates and phosphates from a soil in which these normally occur in very poor concentrations.

When the plant has finished flowering, it stops taking food from the soil, the roots are no more energised, they stop attracting positive charges and what we call translocation occurs. The nutrients from the stem and leaves go in the direction of the roots and potassium, magnesium and so on are returned back to the clay humus system. In effect, no exportation of potassium or sodium occurs when you harvest paddy for instance, because it is ripe at the time of harvest and gives back all its potassium to the soil. It is therefore unnecessary to bring back potassium in your soil after paddy production. This is, of course, as long as you don't lose your potassium by erosion. You must, for this reason, maintain the clay in your soil.



The cycle of erosion normally starts when you stop putting organic matter in the soil. When the humus content drops, clay begins to wash off very quickly with the water because it is very sensitive to water erosion. Water is a peculiar liquid with both plus and minus charges. However, there is a kind of polarization of the water molecule with a plus charge on the hydrogen atom. Clay, being negative, is thus attracted by water. If you stir soil into a glass of water, the clay tends to remain in suspension because it is attracted by an electric charge to the water while sand and other particles sink to the bottom. In good conditions, when the clay and humus content is balanced, they are held together in a tight bond and are therefore not attracted by the water. On the contrary, if you burn your forests or your straw, you destroy the humus content, consequently bringing down the cation exchange capacity and then you are compelled to replenish potassium in your soil. In traditional systems of agriculture, the erosion of agricultural soils was generally avoided by producing humus (by composting) and by importing good clay, or marl , for instance, which is a very rich form of limestone with a good clay content. Calcium is very good for binding clay and humus together. By bringing in good clay with calcium and by adding compost it is possible to create a system whereby fertility of the soil is maintained. This is what we have totally forgotten in our modern agricultural system. We have forgotten how to feed the soil. We just feed the plants. If we feed the soil, it is necessary to only compensate for the elements that have been exported with the seed. This need can, to some extent, be fulfilled by growing plants like soya bean, which are nitrogen fixing. It is possible, in such a manner to develop an organic system with extremely low inputs of fertilizers in the soil.

Now let us look at the different levels of fertilization.

Fertilization must occur, firstly, at the level of the soil, next at the level of microbes, other soil fauna and lastly plants. If you work correctly, it would only be necessary to bring in what has been exported with the plants, provided the rest functions well.

The reason for fertilizing the soil is to improve its cation exchange capacity, i.e. the capacity of the soil to retain positive charge. We must fertilize microbes because they convert elements into oxides like nitrates, phosphates and into chelated forms. To produce these nutrients, they need oxygen, and soil aeration is brought about by other soil fauna. It is therefore also necessary to stimulate the growth of the living organisms of the soil. If activity at these levels is optimum, cultivating plants could be very easy.

The first step is thus to improve the quality of your soil. In order to do this you need to know what you have in your soil. A proper soil analysis is essential; not just a study of the clay content but also the quality of clay. If you, for instance, decide to start growing vegetables on a very eroded soil, you need to bring good clay into it. You can transport vertisols, for instance, which have a high content of good clay.

In the Middle Ages in France, people used to transport between 2 and 30 tons of clay per ha., depending on what they intended to grow, to improve the quality of their soil. For instance, the famous Bordeaux wine was made from grapes grown in very acid soils that were improved and made suitable by adding clay with limestone. By this they were able to increase the pH from 4 or 4.5 (a level impossible for growing grapes for wine) to a pH of 5.5 or 6. Now Bordeaux wine is one of the best wines of the world. So, there is a possibility of improving even soil that is really poor by enriching it with good clay

The quantity of clay depends on what you want to produce. If you want to grow vegetables you don't need to cover very large areas. I have been working in the North of Burkina Faso on very eroded soils. To grow vegetables for a family you just need an area of 300-500 sq.mts. For this, we transport clay manually because the people have no other means and no money.

We first prospect an area to find out where the good clay occurs. We have a way by which we measure the quality of the clay, and if we find clay of good quality, we transport it to small patches for vegetable growing. We then use organic matter to produce compost. By mixing together clay and compost, we boost the cation exchange capacity of the soil, making it ready for agriculture. This is how it is possible to start agriculture on very, very poor soils.

In France, for instance, we have prospected the whole country for clay and found some deposits with 300 m. of very good clay. So we know that we have a lot of clay with which we can improve a million ha. But in a large country like India, you have probably not completed prospecting the entire country for its clay deposits. I do not know if this information is available in India. But there is a very big reserve of clay all over the world.

To improve your microbial activity you must concentrate on the three big families of microbes.

The family that produces humus comprises mainly mushrooms. To improve this family, you must produce compost because composting involves aerobic fermentation (which is due to mushrooms). When you bring compost, you will bring a lot of mushrooms and a huge quantity of microflora which will be able to transform the organic matter of the soil into humus. The main problem is that when you put organic matter in your soil, you have three possibilities. If you have good aerobic soil conditions you can have humification. This is the dominant reaction if the ratio of carbon and nitrogen of your organic matter is very high.

The other possible reaction is mineralization. This reaction occurs when the ratio of carbon and nitrogen in your organic matter is very low. For instance, in the forests, the organic matter has a very high ratio of carbon and nitrogen and that is why forests produce very large quantities of humus. The inverse reaction takes place if you, for instance, put a lot of cattle manure which has a very low ratio of carbon and nitrogen. If you put too much cattle manure in comparison to straw or leaves, you increase mineralization. You must therefore avoid this if you have very low organic matter content. If your soil, on the other hand, has a high organic matter content, then it can improve the process of humification. But the general problem with tropical soils is the low levels of humification. To remedy this you have to bring in organic matter with a very high carbon-nitrogen ratio. Nature, of course, provides for this by ensuring that the carbon-nitrogen ratio increases as you go southwards.

Considering this it is foolish to bring cattle of the north of Europe to southern countries because they are unable to digest tropical plants which have a very high carbon-nitrogen ratio. Instead, it is much better to use animals who have a special species of mushroom in their stomach which help to break down plants with a high lignin content. As you go towards the north, the cellulose content in plants increases while southwards, the lignin content gets higher. In the south lignin is important because it produces a lot of humus.

Another process of transformation of organic mater is that which takes place under anaerobic conditions – fossilization. For instance, if your soil has a very bad structure, and you put a lot of water on it, oxygen can enter into it only with great difficulty, or if you make compost and compress it, you create anaerobic conditions which give out a very bad odour. In typical anaerobic conditions, ammonia and sulfur and so on are released, which smell very bad. In such conditions it is absolutely impossible to produce humus. Mushrooms are microflora which cannot survive anaerobic conditions. They need aerobic conditions to live. So if you create anaerobic conditions in your soil or compost, you immediately start the process of fossilization of your organic matter. Under irrigation, in paddy, for instance, the organic matter is maintained, it cannot get lost, because you put your soil in anaerobic conditions and allow fossilization of the organic matter. However, with this process you will get an organic matter of poor quality. In Venice, for instance, all the buildings rest on logs of wood since 8 centuries, but they have not collapsed because the logs are under water and it is impossible for mushrooms to destroy them. Wood can remain undestroyed under water for thousands of years.

You must, however, avoid anaerobic conditions by developing soil fauna, thereby ensuring good aeration. Under aerobic conditions, on the other hand the two possibilities of humification and mineralization are both important and must be developed– humification to protect your soil and mineralization to feed you plant. You must maintain an equilibrium between these two processes.

So, to stimulate humification you must use compost. If, for instance, after an irrigated paddy crop, you have a dry season during which you will not be irrigating, instead of leaving the field exposed, you must start mineralization once again, in this case by green manure. Green manure is a very young plant that must be cut back just before flowering, at the moment when the carbon-nitrogen ration is very low. By this method, humus is not produced but the microbes of mineralization are stimulated very, very quickly.

Generally in sandy soils you have a very intensive mineralization. Never use green manure on sandy soils. On clayey soils, where the movement of organic matter is very slow, you can use green manure. For sandy soils, use only compost because the reaction of mineralization is really too fast.

The population of microbes present are essentially for mineralization. You must go slow. That is why, on sandy soils in tropical countries, we consider it important to keep a minimum of shade, a hedge around your field, for instance.

In Java, they have developed a very clever system. They have big trees around the houses and then the size of the vegetation decreases slowly. They use all the light available and grow several kinds of vegetables under the shade of even the big trees around the houses. In temperate countries it is very different and absolutely impossible to produce vegetables in the shade because the sun is the limiting factor.

There are, however, a number of tree species which permit cultivation under them. In very dry areas like the north of Burkina Faso in Africa, we use an Acacia species – Acacia albida – which develops leaves in the dry months and sheds them in the rainy season. So it is very easy to cultivate under trees like Acacia albida. In the dry months when you have no crop, it has all its leaves which are very rich in nitrogen. It is a nitrogen fixing tree. In the monsoon there are only bare branches which make it very easy to cultivate below them.

The third class of microbes which you must stimulate are those which live in the root zone of plants – the rhizospheric population. To stimulate this population, you must use different species of plants. This is why, rotation must be practiced. You must avoid repeatedly growing the same crop because this will stimulate only the same species of microbes. For instance, if you concentrate only on the family of Cruciferae, they use a lot of sulfur and greatly stimulate the microbial population of sulfur and year after year if you grow mustard for example, too much sulfur will be consumed, eventually leading to a depletion of sulfur reserves. You must therefore change your crop in order to change the rhizospheric population.

For annual plants you must practice rotation while for perennial plants you must use association. There are very few agronomic studies on the topic of association, but we do know that there are a lot of species which can grow together well and there are also those which cannot. For instance, in a vineyard, peaches have a very good association, but this is not the case with apples. Peaches in vineyards improve both the perfume of the peach as well as the perfume of the wine. We do not know exactly why. It probably has something to do with the secretion by the roots. There are very few such studies. In vegetables, if you plant strawberries with onions or garlic, there is an increase in the perfume of the strawberries. On the other hand, beans and onions are very bad companions. It is very interesting. We do not know what really occurs. It is probably because half of the photosynthesis goes through the roots by what we call root exudation. To feed together, the plants send a lot of exudate into the soil and the microbes which are along the roots use this exudate – sugar, amino acid, lipid and so on and in exchange the microbes transform elements into nitrate, sulfate and so on. It is a very close association.

There is a very good study made by the team of Timonin from Chicago University (Timonin 1950). They have used an artificial medium – just water – to cultivate plants. They create a deficiency, a specific deficiency in oligo elements, for instance, in zinc or manganese or copper and then they take the roots of the plant with just the sand around the plant and put it in the soil and observe an increase in the population that form the chelation of zinc or manganese or copper. This means that when a plant has a deficiency, it secretes a specific exudate to stimulate the function of the microbes that they use. That is the reason why you absolutely need a good population to answer to the exudate production and that is what we call the rhizosperic population.

Plants are cleverer than we think. They are even able to change the texture of the soil. For instance, plants which grow in sandy soil are able to adapt themselves by a very intelligent method. They accumulate clay around their roots, while all around them there is sand. When you do a microscopic study of the roots, you find them totally covered with clay (Greenland 1979). This is a very local transformation of the texture of the soil. Inversely, in very dense, clayey soils, there are plants which are similarly well adapted. They, in fact, produce sand! Calcium oxalate is a sort of crystal produced by plants which effectively pushes the clay away and this creates space between the clay and the roots to let in water and air (Callot 1982). This is how plants survive in clayey soils. Around the roots you also find very special populations of microbes which are able to transform the pH, texture and so on.

To recapitulate, you need to have a good population of fauna in your soil because you need good aeration and you need good water circulation. To obtain a good faunal population, you need a high level of organic matter for which you can use compost. You must avoid using pesticides because they destroy a lot of worms, acarians, small insects of the soil and so on. You must in fact protect your faunal population. So if you correctly fertilize the 3 levels – soil, microbes and fauna – then normally, for plants, the only thing you have to do is to bring back what you have exported. If you grow beans, it is not necessary to bring back nitrogen because beans produce their own nitrogen. If you grow paddy, it is not necessary to bring back potassium because there is no exportation of potassium. You only need to return what you have exported. Normally, if the whole system works efficiently and you have a deep root development, exportation levels will not be high.

We generally believe that it is necessary to put a lot of things in the soil. Look at the forest which needs only 20 kg of nitrogen per ha, about 20 kg of phosphorus and 30 kg of potassium to produce huge trees of 90 m. height. The needs of nature, by luck, are very low or else the earth would have been covered with deserts by now.

If a soil is dead, however; and I have seen enough soils over the world to be able to tell that a soil is dead, it would be impossible to produce plants without fertilizers. You have first to start life and then you can decrease the quantity of fertilizer. But on a dead soil it is impossible to produce directly, because nothing functions.

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The Bourguinon Classic (Book Review)

Regenerating the Soil

Regenerating the Soil
From agronomy to agrology
Claude Bourguignon

By Claude Bourguignon

Pp. 198 (2005)
Rs. 250
Available from OIB

Claude Bourguignon is a worthy successor to Albert Howard whose book *An Agricultural Testament* is also available from OIB. In this new book, Bourguignon systematically shatters modern farming's increasingly unnatural and unsustainable agricultural practices based on extensive use of industrially produced synthetic chemicals and pesticides.

In his grand vision of sustainable farming – which can also be more productive – Bourguignon restores the importance of the ancient truth that soils are by nature alive and that only living soil will support an agriculture of permanence.

In contrast, modern agriculture progressively depletes the soil of life eventually turning it sterile and lifeless.

Bourguignon bases his theory on an amazing set of discoveries resulting from close observation of nature (including the Amazon forest), the work of termites, earthworms and microbes, and from working with soils and plants in different countries and ecozones.

Bourguignon shows how a living soil actually operates and how it can be made to work its wonders without the use of chemicals of any kind.

He also explains why chemicals perform in the short run but kill the soil in the long run.

He analyses the nutrient needs of plants and shows how plants get 97%of their nutrition from the atmosphere and only 3% from the soil. However, with modern agriculture, this is reversed. It works rather on the assumption that the plant must take 97% of its nutrition from the soil.

As this is contrary to the nature of the plant, it takes only the minimal that it needs from the soil and the rest leaches away.

Regenerating the Soil has become the new bible of the organic and natural farming movements and will rule discussions on the subject for several decades to come. It brings the astonishing science behind organic farming out in the open.

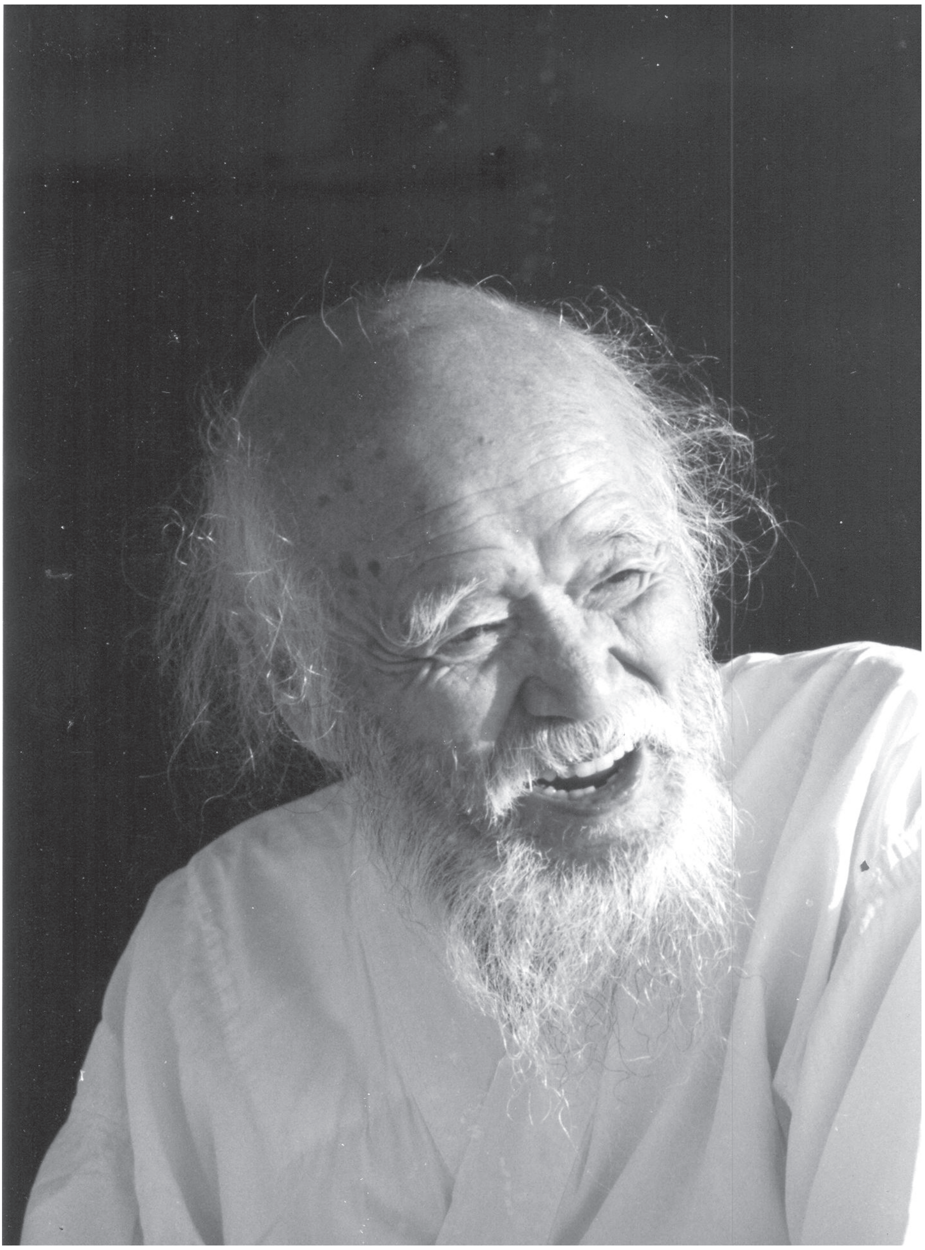


Photo by N.J. Antony

Masanobu Fukuoka

Masanobu Fukuoka, well known author of *The One Straw Revolution* and several other oustanding books on natural farming, left Planet Earth on August 16, 2008. He was 95. He died of old age. Despite his years, he continued to talk on agriculture till a few months before he departed.

Hundreds of organic farmers in India and across the world mourned the loss of one of their very own. For though he had trained as an agricultural scientist, Fukuoka eventually worked and died as a farmer, fairly disgusted with the approaches of modern science to agriculture, the soil and human activities in general.

As one writer summed it: 'Fukuoka claimed that "natural farming" differed from both modern scientific agriculture and from organic farming, since the latter two were both basically scientific in approach. Indeed, Fukuoka's own method was as much mystical as scientific in inspiration. As shown by his assertion that "giving up your ego is the shortest way to unification with nature," it drew on oriental religious traditions, in particular those of Buddhism. Fukuoka considered himself to have received enlightenment at the age of 25, after a life-threatening bout of pneumonia convinced him of the futility of human efforts to control the world. Instead, he resolved to work in harmony with nature.

'Until that time he had been committed to modern agricultural methods, studying microbiology and plant pathology, and working as a quarantine officer at the Agricultural Customs Office. After his change of heart he returned to his native village on Shikoku, the smallest and most rural of Japan's four main islands, and began to farm on his father's land. Land reform after the war led to the confiscation of much of the family holdings, leaving Fukuoka with a tiny quarter-acre plot, which became the site of his experiments with natural farming techniques.'

Here at Other India Press, we felt his loss all the more. OIP has been committed to the Indian publishing of *The One Straw Revolution* now for nearly two decades. The book is now into its 18th printing!

Fukuoka had a huge following in India and made several trips to this country to be with organic farmers who had heard of him or were practising his method. Many organic farmers were indeed able to meet with him and talk to him about problems they faced on their farms. He had good natured advice for all.

Fukuoka-san is a permanent, indestructible tribute to the idea that small is not just beautiful but often revolutionary as well. A grain of rice became a one-straw revolution. A quarter acre plot became a laboratory which changed the world. A single book destroyed entire libraries of so-called agricultural science. If *that* does not give us hope, nothing else will.

(All Fukuoka's books can be ordered from Other India Bookstore. They can also be downloaded free from the Internet.)

The One Straw Revolution

The One-Straw Revolution
MASANOBU FUKUOKA

By Masanobu Fukuoka

Pp. 215 (2009)

Marathi Edition: Rs. 40 / Hindi Edition: Rs. 60 / English Edition: Rs. 100 from OIB

The One-Straw Revolution

My way was opposite. I was aiming at a pleasant, natural way of farming which results in making the work easier instead of harder. 'How about not doing this? How about not doing that?' – that was my way of thinking. I ultimately reached the conclusion that there was no need to plough, no need to apply fertilizer, no need to make compost, no need to use insecticide. When you get right down to it, there are few agricultural practices that are really necessary.

'Do-Nothing' Farming

The method of 'do-nothing' farming is based on four major principles:

1. No cultivation
2. No fertilizer
3. No weeding
4. No pesticides

No Cultivation

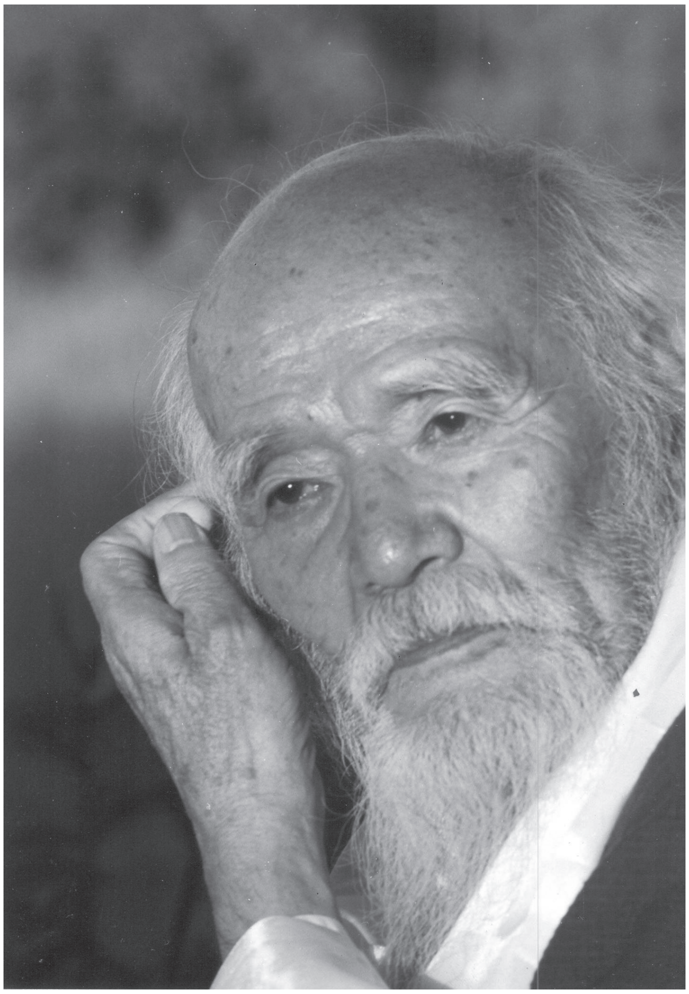
Plowing a field is hard work for the farmer and usually one of the most important activities in farming operations. In fact, to many people, being a farmer is synonymous with turning the soil with plow or hoe. If working the soil is unnecessary then, the image and reality of the farmer change drastically. Lt us look at why plowing is thought to be essential and what effect it actually has.

Plowing Ruins the Soil: Knowing that the roots of crops penetrate deep into the earth in search of air, water, and nutrients, people reason that making larger amounts of these ingredients available to the plants will speed crop growth. So they clear the field of weeds and turn the soil from time to time, believing that this loosens and aerates the soil, increase the amount of available nitrogen by encouraging nitrification, and introduces fertilizer into the soil where it can be absorbed by the crops.

Of course, plowing under chemical fertilizers scattered over the surface of a field will probably increase fertilizer effectiveness. But this is true only for cleanly plowed and weeded fields on which fertilizer is applied. Grassed fields and no-fertilizer cultivation are a different matter altogether. We therefore have to examine the necessity of plowing from a different perspective. As for the argument that this helps increase available nitrogen through nitrification, this is analogous to wasting one's body for some temporary gain.

Plowing is supposed to loosen the soil and improve the penetration of air, but does not this in fact have the opposite effect of compacting the soil and decreasing air porosity? When a farmer plows his fields and turns the soil with a hoe, this appears to create air spaces in the soil and soften the dirt. But the effect is the same as kneading bread: by turning the soil, the farmer breaks it up into smaller and smaller particles which acquire an increasingly regular physical arrangement with smaller interstitial spaces. The result is a harder, denser soil.

The only effective way to soften up the soil is to apply compost and work it into the ground by plowing. But this is just a short-lived measure. In fields that have been weeded clean and carefully plowed and re-plowed, the natural aggregation of the soil into larger particles is distributed; soil particles become finer and finer, hardening the ground.



Wet paddy fields are normally supposed to be tilled five, six or even seven times during the growing season. The more zealous farmers have been competing with each other to increase the number of plowings. Everyone thought this softened the soil in the paddy and let more air into the soil. That is the way it looked to most people for a long time, until after World War II, when herbicides became available. Then farmers discovered that when they sprayed their fields with herbicides and reduced the frequency of plowing, their yields improved. This demonstrated that intertillage had been effective as a weeding process but had been worthless as a means for loosening the soil.

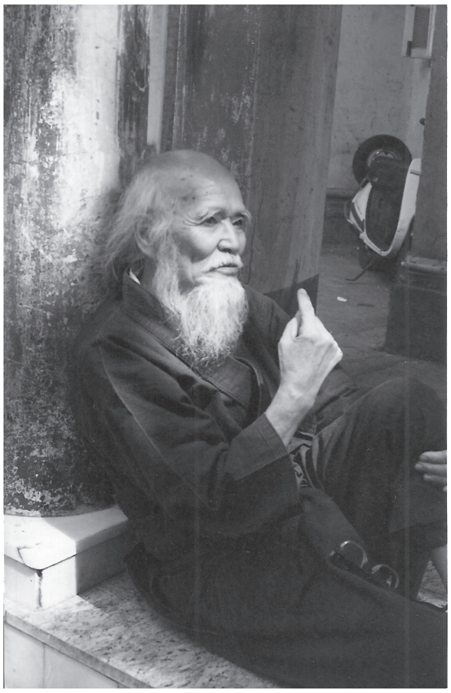
To say that tilling the soil is worthless is not the same as claiming that it is unnecessary to loosen the soil and increase its porosity. No, in fact I would like to stress, more than anyone else, just how important an abundance of air and water are to the soil. It is in the nature of soil to swell and grow more porous with each passing year. This is absolutely essential for microorganisms to multiply in the earth, for the soil to grow more fertile, and for the roots of large trees to penetrate deep into the ground. Only I believe that, far from being the answer, working the soil with plow and hoe actually interferes with these processes. If man leaves the soil to itself, the forces of nature will enrich and loosen.

Fukuoka: ‘I am crazy, I want to go back to childhood!’

I am a small person, staying on a small Japanese island called Shikoku. I am crazy and child like. That’s how I would like man to be. I say that because science and intellect are big mistakes which have taken man away from nature. Mind you, intellect here means knowledge gathered from books and science. But I have a different sense of intellect – that which is related to nature. You may call it natural wisdom, but for me it is the perfect wisdom because it is not related to bookish knowledge.

Even small animals and insects have their own sense of natural wisdom which is not distorted. It is only human brains that are warped. Unlike human beings, do animals distinguish between rich and poor? Do they say: ‘I’m wise and you are stupid?’ Are they foolish enough to go to war with each other using deadly weapons, or do they say: ‘I am ugly and you are beautiful?’

What is beautiful and ugly anyway? Does applying cosmetics make one beautiful? No. The simplicity of nature is beauty in itself. If you are simple, you will find every being in this world beautiful.



I want to go back to childhood as soon as possible. When I die, I want to go to heaven, which I believe is paradise. Earth was a paradise when it was created about four billion and 600 million years ago. It was completely green, till man started its systematic destruction. But I want the other world to be nice, fresh and green. I don’t want a calender there. Even now, I don’t like to keep track of time, and that is why I do not wear a watch. I’ve always felt that keeping track of time is very restricting. I want to be young, forever.

The way to human salvation lies in returning to Nature. Man has had a big role to play in converting forests and fertile plains into vast deserts and barren lands. I propose to reverse this tide of ecological devastation before it is too late.

For 50 years I have experimented with advantages of reducing energy, the effort expended in growing crops while maintaining yields and building soil fertility. Placing my trust in the innate wisdom of natural processes, I have developed what I call ‘Natural Farming’ or the ‘Do-nothing’ method that rejects the conventional notions of modern scientific agriculture for a more gentle approach, attuned and responsive to the elements and cycles of nature.

But in this era submerged in Science, I find very few takers for this method. In the last 12 years, I have been to Somalia, Ethiopia, Kenya, the US, Thailand, the Philippines, India and Europe. The warmest response to the natural farming method has been from India. Thailand was also enthusiastic. Europe and the US have accepted me partially: though they have welcomed me, they don’t sound very excited.

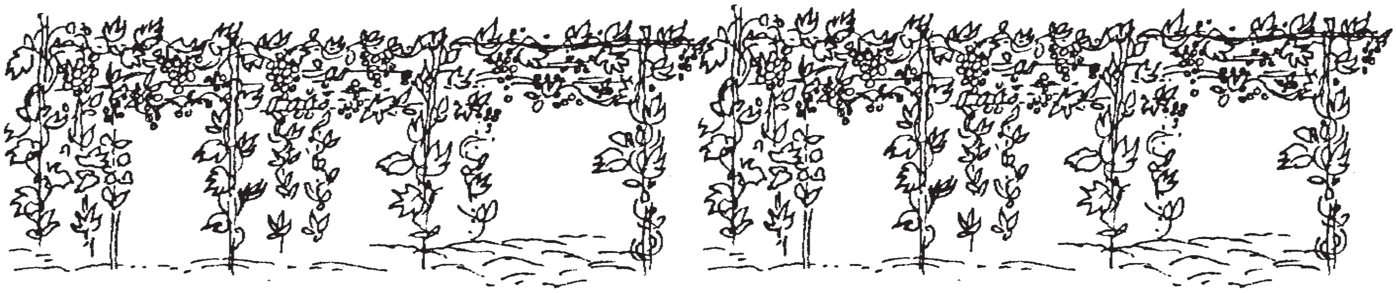
The worst response is from my own country. There, agriculture is an organised industry. They use the modern techniques, which include the use of pesticides and herbicides, strictly forbidden in natural farming. The multinationals are dead against me and the Japanese farmers ignore my methods. What they do not realise is that if you leave the seed in the soil, it will grow by itself. It doesn’t need any weeding, ploughing or fertilizers. Nature will take care of it. If you allow plants to grow the natural way, you will get a much healthier crop, infinitely more nutritious.

Specialisation, I feel, is boring. For, if you start applying your mind too much, life becomes very serious and complicated. One should have diversified interests. Before I was 25 years old I worked as an insect specialist. But I couldn’t see the beauty of nature. If I were a doctor, I would not have known the beauty of becoming a perfect lover – of perceiving the warmth and love of Mother Earth.

I live in a small hut in the mountains. My house has no electricity, no cooking gas, no taps – just water pipes. My hut is covered with plants and is made of wood which was thrown away by people. When I’m at home, I cook my own food. I have a big farm in front of my hut in which I grow all kinds of flowers, fruits and vegetables. It is frequented by beautiful women, who are a weakness with me. I do not believe in one God. He exists in the trees, the flowers, the farmer, and so on.

Although I am 78 years old, I am as active and healthy as I was at the age of 17. I sleep for just four to five hours a day. And that is because I have been living in harmony with Nature. I do not know how long I will live, but I know that I want to end my life swirling in a whirlpool of the Ganges, or in any holy river in Japan – swirling and swirling till I melt and submerge completely in the currents.

(Source: Communication with Shruti Prasad, Sunday Observer, 22.12.91)



Farmers usually plow the soil to a depth of about four to eight inches, whereas the roots of grasses and green manure crops work the soil down to twelve inches, fifteen inches, or more. When these roots reach down deep into the earth, air and water penetrate into the soil together with the roots. As these wither and die, many types of microorganisms proliferate. These organisms die and are replaced by others, increasing the amount of humus and softening the soil. Earthworms eventually appear where there is humus, and as the number of earthworms increase, moles begin burrowing through the soil.

The Soil Works Itself: The soil lives of its own accord and plows itself. It needs no help from man. Farmers often talk of 'taming the soil' and of a field becoming 'mature,' but why is it that trees in mountain forests grow to such magnificent heights without the benefit of hoe or fertilizer, while the farmers's fields can grow only puny crops?

Has the farmer ever given any careful thought to what plowing is? Has he not trained all his attention on a thin surface layer and neglected to consider what lies below that?

Trees seem to grow almost haphazardly in the mountains and forests, but the cedar grows where it can thrive to its great size, mixed woods rise up where mixed woods must, and pine trees germinate and grow in places suited for pine trees. One does not see pines growing at the bottom of a valley or cedar seedlings taking root on mountain tops. One type of fern grows on infertile land and another in areas of deep soil. Plants that normally grow along the water's edge are not found on mountain tops, and terrestrial plants do not thrive in the water. Although apparently without intent or purpose, these plants know exactly where they can and should grow.

Man talks of 'the right crop for the right land,' and does studies to determine which crops grow well where. Yet research has hardly touched upon such topics as the type of parent rock and soil structure suited to mandarian orange trees, or the physical, chemical, and biological soil structures in which persimmon trees grow well. People plant trees and sow seed without having the faintest idea of what the parent rock on their land is and without knowing anything about the structure of the soil. It is no wonder then that farmers worry about how their crops are going to turn out.

In the mountain forests, however, concerns over the physical and chemical compositions of the topsoil and deeper strata are nonexistent; without the least help from man, nature creates the soil conditions sufficient to support dense stands of towering trees. In nature, the very grasses and trees, and the earthworms and moles in the ground, have acted the part of plowhorse and oxen, completely rearranging and renewing the soil. What can be more desirable to the farmer than being able to work the fields without pulling a plow or swinging a hoe? Let the grasses plow the topsoil and the trees work the deeper layers. Everywhere I look, I am reminded of how much wiser it is to entrust soil improvement to the soil and plant growth to the inherent powers of plants.

There is no need to plow or improve a soil because nature has been working at it with its own methods for thousands of years. Man has restrained the hand of nature and taken up the plow himself. But this is just man imitating nature. All he has really gained from this is a mastery at scientific exposition.

No amount of research can teach man everything there is to know about the soil, and he will certainly never create soils more perfect than those of nature. Because nature itself is perfect. If anything, advances in scientific research teach man just how perfect and complete a handful of soil is, and how incomplete human knowledge.

We can either choose to see the soil as imperfect and take hoe in hand, or trust the soil and leave the business of working it to nature.

No Fertiliser

Crops Depend on the Soil: When we look directly at how and why crops grow on the earth, we realize that they do so independently of human knowledge and action. This means that they have no need basically for such things as fertilizers and nutrients. Crops depend on the soil for growth.

I have experimented with fruit trees and with rice and winter grain to determine whether these can be cultivated without fertilizers. Of course crops can be grown without fertilizer. Nor does this yield the poor harvests people generally believe. In fact, I have been able to show that by taking full advantages of the inherent powers of nature, one can obtain yields equal to those that can be had with heavy fertilization. But before getting into a discussion of why it is possible to farm without using fertilizers and whether the results are good or bad, I would like to look first at the road scientific farming has taken.

Long ago, people saw crops growing in the wild and called this 'growth.' Applying discriminating knowledge, they proceeded from the notion of wild plant growth to plant cultivation.

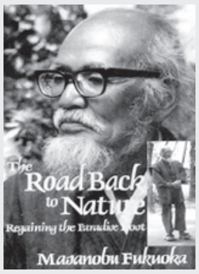
For example, scientists typically begin by analyzing rice and barley plants and identifying the various nutrients. They then speculate that these nutrients promote the growth of rice and barley. Next they apply the nutrients as fertilizer, and observing that the plants grow as expected, they conclude that the fertilizer is what makes the crops grow. The moment they compare crops grown with and without fertilizer and conclude that fertilizer application results in taller, better yielding plants, people cease to doubt the value of fertilizers.

Are Fertilizers Really Necessary? The same is true when one delves into the reasons why fertilizers are thought to be essential to fruit trees. Pomologists normally begin with an analysis of the trunk, leaves, and fruit of the tree. From this they learn what the nitrogen, phosphorous, and potassium contents are and how much of these components are consumed per unit of annual growth or of fruit produced. Based on the results of such analyses, fertilization schedules for fruit trees in mature orchards will typically set the amount of nitrogen components at 90 pounds each. Researchers will apply fertilizer to trees grown in the test plots or earthen pots, and examining the growth of the tree and the amount and quality of fruit it bears, will claim to have demonstrated the indispensability of fertilizer.

Learning that nitrogenous components are present in the leaves and branches of citrus trees and that these are absorbed from the ground by the roots, man hits upon the idea of administering fertilizer as a nutrient source. If this succeeds in supplying the nutrient needs of the leaves and branches, man

Fukuoka: The Return to Nature

The Road Back to Nature: Regaining the Paradise Lost



By Masanobu Fukuoka

Pp. 377 (1996)
Rs. 300
Available from OIB

Over the past several years, as his ideas have caught increasing attention outside his native Japan, Fukuoka has turned to address such critical global issues as ecologically destructive farming practices, desertification and deforestation. During his travels to three continents – North America, Europe, and Africa – his worst fears have been confirmed: 'Everywhere, I found the land turning to desert. Africa is the most advanced; America still looks green but is rapidly deteriorating; and Europe's picture-postcard scenery is just a semblance of true nature ... All these lands were healthy and green at one time, but human civilization has stripped them of natural life and left deserts in their place.

In this collection of articles, lectures and essays, Fukuoka records for the first time his impressions and observations during those travels. Like a detective solving an ancient crime, he traces man's role in the creation of vast deserts and barren lands where fertile plains and forests once lay and proposes ways to reverse this tide of ecological devastation before it is too late. He recounts also how he developed a super high-yielding variety of rice, and his incredulity and despair at the petty international seed politics that prevent the use of this miracle grain where it could do the most good. And he goes on to lucidly demonstrate the interdependence of nature, God, and man.

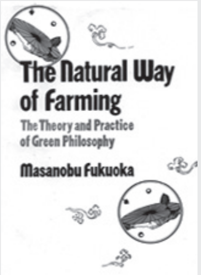
* * *

What would have happened had the earth been left alone to begin with? Leaving a cultivated field untended is abandonment, but that is not what I'm talking of. If the land is not abandoned, but instead left in a natural state; if, as in the mountain forests, the earth is not ploughed or tilled, but left to itself, in a few thousand years, a rich soil develops.

Man kills and destroys the soil. Then he packs it into these pots, takes it to the laboratory and runs tests on it. Based on the results of such tests, he concludes that by increasing the ploughing depth from one inch to two inches, one can harvest an extra five bushels of grain, and that ploughing to a depth of three inches will give even higher yields. Of course, all that makes perfect sense when you take dead soil and subject it to tests under unnatural conditions. So word gets out that the deeper one ploughs the higher one's yields. Well, the fact is that even if one deep-ploughs, one can get good yields. In China, for example, they plough the soil down to three inches and still get high yields. So there is no doubting that it can be done. But they only do so because they're operating under the assumption that this has to be done. Wouldn't it have been better had there been a way to grow those crops without ploughing? The reason chemical fertilizers have to be applied is that the paddies are filled with water and the roots of the rice allowed to rot so that the plants are weak. With the roots half-rotted, the crop will be lost unless quick-acting chemical fertilizers are used. That and only that is why administering chemical fertilizers has a booster effect on the rice plants. When man establishes the conditions in a field that render chemical fertilizers necessary, plants rise in that field, then runs tests in which he fertilizes one section of the field and doesn't fertilize another, it stands to reason that the fertilized plot will produce larger plants. That's why people think rice can be grown in high yields with fertilizers.

Fukuoka: Farming the natural way

The Natural Way of Farming: The Theory and Practice of Green Philosophy


The Natural Way of Farming
The Theory and Practice of Green Philosophy
Masanobu Fukuoka

By Masanobu Fukuoka

Bookventure

Pp. 284 (1993)
Rs. 300
Available from OIB

For those who thought that *The One Straw Revolution* was the final word on natural farming here is a major surprise. In *The Natural Way of Farming*, Fukuoka returns to provide an in-depth look at his unique method of do-nothing farming. The book contains photographs diagrams and tables and is a practical reference for gardeners and farmers as well. Declared coverage of actual methods supplements the basically philosophical thrust of *The One Straw Revolution*. There are lots of stories and a fund of experience from one of the most extraordinary farmers that the 20th century has produced. And to think that he emerged as he did only by turning his back firmly on every aspect of farming propagated by the Green Revolution and modern agribusiness. – C.A.

* * *

The no-fertilizer principle does not say that fertilizers are worthless, but that there is no need to apply chemical fertilizers. Scientific technology for applying fertilizers is basically pointless for the same reason. Yet research on the preparation and use of organic composts, which are much closer to nature, appears at first glance to be of value.

When compost such as straw, grasses and trees, or seaweed is applied directly to a field, it takes a while for this to decompose and trigger a fertilizer response in the crops. This is because microbes help themselves to the available nitrogen in the soil, creating a temporary nitrogen deficiency that initially starves the crops of needed nitrogen. In organic farming, therefore, these materials are fermented and used as prepared compost, giving a safe, effective fertilizer.

immediately jumps to the conclusion that applying fertilizer to citrus trees is both necessary and effective.

If one works from the assumption that fruit trees must 'be grown,' the absorption of fertilizer by the roots becomes the cause, and the full growth of the leaves and branches the effect. This leads quite naturally to the conclusion that applying fertilizer is necessary.

However, if we take as our starting point the view that a tree grows of its own accord, the uptake of nutrients by the tree's roots is no longer a cause but, in the eyes of nature, just a small effect. One could say that the tree grew as a result of the absorption of nutrients by the roots, but one could also claim that the absorption of nutrients was caused by something else, which had the effect of making the tree grow. The buds on a tree are made for budding and so this is what they do; the roots, with their powers of elongation, spread and extend throughout the earth. A tree has a shape perfectly adapted to the natural environment. With this, it guards the providence of nature and obeys nature's laws, growing neither too fast nor too slow, but in total harmony with the great cycles of nature.

The Countless Evils of Fertilizer: What happens when the farmer arrives in the middle of all this and spreads his fields and orchards with fertilizers? Dazzled and led astray by the rapid growth he hears of, he applies fertilizer to his trees without giving any thought to the influence this has on the natural order.

As long as he cannot know what effects scattering a handful of fertilizer has on the natural world, man is not qualified to speak of the effectiveness of fertilizer application. Determining whether fertilizer does a tree or soil good or harm is not something that can be decided overnight.

The more scientists learn, the more they realize just how awesome is the complexity and mystery of nature. They find this to be a world filled with boundless, inscrutable riddles. The amount of research material that lies hidden in a single gram of soil, a single particle, is mind-boggling.

People call the soil mineral matter, but some one hundred million bacteria, yeasts, molds, diatoms, and other microbes live in just one gram of ordinary topsoil. Far from being dead and inanimate, the soil is teeming with life. These microorganism do not exist without reason. Each lives for a purpose, struggling, cooperating, and carrying on the cycles of nature.

Into this soil, man throws powerful chemical fertilizers. It would take years of research to determine how the fertilizer components combine and react with air, water, and many other substances in nonliving mineral matter, what changes they undergo, and what relationship should be maintained between these components and the various microorganisms in order to guard a harmonious balance.

Very little, if any, research has been done yet on the relationship between fertilizers and soil microbes. In fact, most experiments totally ignore this. At agricultural research stations, scientists place soil in pots and run tests, but more likely as not, most of the soil microbes in these pots die off. Clearly, results obtained from tests conducted under fixed conditions and within a limited experimental framework cannot be applied to situations under natural conditions.

Yet, just because a fertilizer slightly accelerates crop growth in such tests, it is praised lavishly and widely reported to be effective. Only the efficacy of the fertilizer is stressed; almost nothing is said about its adverse effects, which are innumberable. (pp. 103-109)

No-fertilizer natural farming essentially means the natural cultivation of crops without fertilizers in a soil and environment under totally natural conditions. By totally natural cultivation I mean no-fertilizer tests under 'condition-less' conditions. However such experiments are out of the reach of scientists, and indeed impossible to perform. I am convinced that cultivation without fertilizers under natural circumstances is not only philosophically feasible, but is more beneficial than scientific, fertilizer-based agriculture, and preferable for the farmer. Yet, although cultivation without the use of chemical fertilizers is possible, crops cannot immediately be grown successfully without fertilizers on fields that are normally plowed and weeded.

It is imperative that farmers think seriously about what nature is and provide a growing environment that approaches at least one step closer to nature. But to farm in nature, one must first make an effort to return to that natural state which preceded the development of the farming methods used by man.

Take a Good Look at Nature: When trying to determine whether crops can be grown without fertilizers, one cannot tell anything by examining only the crops. One must begin by taking a good look at nature.

The trees of the mountain forests grow under nearly natural conditions. Although they receive no fertilizer by the hand of man, they grow very well year after year. Reforested cedars in a favourable area generally grow about forty tons per quarter-acre over a period of twenty years. These trees thus produce some two tons of new growth each year without fertilizer. This includes only that part of the tree that can be used as lumber, so if we take into account also small branches, leaves, and roots, then annual production is probably closer to double, or about four tons.

In the case of a fruit orchard, this would translate into two to four tons of fruit produced each year without fertilizers – about equal to standard production levels by fruit growers today.

After a certain period of time, the trees in a timber stand are felled, and the entire surface portion of the tree – including the branches, leaves, and trunk- – is carried away. So not only are fertilizers not used, this is slash-and burn agriculture. How then, and from where, are the fertilizer components for this production volume supplied each year to the growing trees? Plants do not need to be raised; they grow of their own accord. The mountain forests are living proof that trees are not raised with fertilizer but grow by themselves. (pp. 109-110)

Nature is not dead. It lives and it grows. All that man has to do is direct these vast hidden forces to the growth of fruit trees, but rather than using this great power, people choose to destroy it. Weeding and plowing the fields each year depletes the fertility of the soil, creates a deficiency of trace components, diminishes the soil's vitality, hardens the topsoil, kills off microbes, and turns rich, living organic material into a dead, inanimate, yellowish-white mineral matter the only function of which is to physically support the crops. (p.111)

No Weeding

Nothing would be more welcome to the farmer than not having to weed his fields, for this is his greatest source of toil. Not having to weed or plow might sound like asking for too much, but if one stops to think about what repeatedly weeding and running a plow through a field actually means, it becomes clear that weeding is not as indispensable as we have been led to believe.

Is There Such a Thing as a Weed? Does no one question the common view that weeds are a nuisance and harmful to the raising of crops?

The first step that those who distinguish between crops and weeds take is to decide whether to weed or not to weed. Like the many different microorganisms that struggle and cooperate in the soil, myriad grasses and trees live together on the soil surface. Is it right then to destroy this natural state, to pick out certain plants living in harmony among many plants and call these 'crops,' and to uproot all the others as 'weeds'?

In nature, plants live and thrive together. But man sees things differently. He sees coexistence as competition; he thinks of one plant as hindering the growth of another and believes that to raise a crop, he must remove other grasses and herbs. Had man looked squarely at nature and placed his trust in its powers, would he not have raised crops in harmony with other plants? Ever since he chose to differentiate crop plants from other plants, he has felt compelled to raise crops through his own efforts. When man decides to raise one crop, the attention and devotion he focuses on raising that crop gives birth to a complementary sense of repulsion and hate that exclude all else.

The moment that the farmer started caring for and raising crops he began to regard other herbs with disgust as weeds and has striven ever since to remove them. But because the growth of weeds is natural, there is no end to their variety or to the labours of those who work to remove them.

If one believes that crops grow with the aid of fertilizers, then the surrounding weeds must be removed because they rob the crop plants of fertilizer. But in natural farming, where plants grow of their own accord without relying on fertilizers, the surrounding weeds do not pose any problem at all. Nothing is more natural than to see grass growing at the foot of a tree; no one would ever think of that grass as interfering with the growth of the tree.

In nature, bushes and shrubs grow at the foot of large trees, grasses spread among the shrubs, and mosses flourish beneath the grasses. Instead of cut-throat competition for nutrients, this is a peaceful world of coexistence. Rather than seeding the grasses as stunting shrub growth, and the shrubs as slowing the growth of trees, one should feel instead a sense of wonder and amazement at the ability of these plants to grow together in this way.

Weeds Enrich the Soil: Instead of pulling weeds, people should give some thought to the significance of these plants. Having done so, they will agree that the farmer should let the weeds live and make use of their strength. Although I call this the 'no-weeding' principle, it could also be known as the principel of 'weed utility.'

Long ago, when the earth began to cool and the surface of the earth's crust weathered, forming soil, the first forms of life to appear were bacteria and lower forms of plant life such as algae. All plants arose for a reason, and all plants live and thrive today for a reason. None is useless; each makes its own contribution to the development and enrichment of the biosphere. Such fertile soil would not have formed on the earth's surface had there been no microorganisms in the earth and grasses on, the surface. Grasses and other plants do now grow without a purpose.

The deep penetration of grass roots into the earth loosens the soil. When the roots die, this adds to the humus, allowing soil microbes to proliferate and enrich the soil. Rainwater percolates through the soil and air is carried deep down, supporting earth-worms, which eventually attract moles. Weeds and grasses are absolutely essential for a soil to remain organic and alive.

Without grasses growing over the surface of the ground, rainwater would wash away part of the topsoil each year. Even in gently sloping areas, this would result in the loss of from several tons to perhaps well over a hundred tons of soil per year. In twenty to thirty years, the topsoil would wash entirely away, reducing soil fertility to essentially zero. It would make more sense then for farmers to stop pulling weeds and begin making use of their considerable powers.

Of course, it is understandable when farmers say that weeds growing wild in rice and wheat fields or under fruit trees interfere with other work. Even in cases where cultivation with weeds appears to be possible and even beneficial in principle, monoculture is more convenient for the farmer. This is why, in practice, one must adopt a method that utilizes the strength of weeds but also takes into account the convenience of farming operations – a 'weedless' method that allows the weeds to grow (ppp. 112 -113)

Microorganisms and Soil

By Bernard Declercq

Bernard Declercq is an Aurovillian resident of many years standing. Bernard was the soul behind the initiatives at ARISE and has spent enormous time promoting organic farming. A full time organic farmer himself and great experimenter, he displays a bewildering competence in land management based on having learned the best of traditional Indian skills coupled with insights into living nature's functioning. One of the most creative organic farmers this country has seen.

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Alley cropping using leucaena, maize and banana.

In our search for a sustainable farming system, where shall we turn our attention to for inspiration and guidance?

We are in the epoch of 'Sustainable Agricultural Conferences' organized throughout the country. These seminars are being addressed by scientists, professors and others, who were actually in the first place responsible for the very destructive and very unsustainable farming practices in the last few decades. There are some doubts whether we can get proper answers from this direction.

Though, it must be said that if scientists would open their eyes, come out of their narrow-minded perceptions, be open to a finer understanding of the natural processes, they could be of immense help. And some scientists are speaking out.

But our one instructor can only be the forest, a natural system undisturbed by men. Tropical rain forests, for instance, have been keeping up their immense production for millions of years (30-60 million years it seems). If there is anything sustainable on this planet it must be these forests.

In contrast to this, we, as humans, have only 8,000 years of agriculture behind us.

Maybe the traditional farming and water harvesting practices of Asia could still be taken as an example of sustainability. But we have discarded this wonderful system, soiled it, filled up the tanks with buildings and wastes and we have cut the forests.

Bill Mollison once said 'If we lose all our agricultural universities, we really do not lose much. But if we lose the forests, we lose everything.'

Then what does the forest teach us?

What we can learn from the forests is limited only by our capacity to understand its being and functioning.

Two lessons from the forest are of urgent and immediate use for us, biodiversity and soil life. These will be looked at more deeply shortly hereafter. There are, of course, innumerable other topics in the teaching curriculum of the forest such as optimum recycling, low external inputs, indigenous genetic resources, the interconnectedness of all life forms – animal and plant including soil fauna and flora – relationships between soil, vegetation and climate. The soil determines the climate as much as the climate determines the soil and the vegetation etc.etc. There is no end to the wealth of knowledge that we can freely imbibe from the forest.

But let us look at two points – biodiversity and soil life – which we have mentioned earlier and try to understand that these are of immense importance for the work in our fields now.

I. BIODIVERSITY

Mixed Cropping

When we go to the field tomorrow morning, we will carry seeds, not just of peanuts or sorghum, but of other millets, pulses, hedge plants, herbs, green manures and certain tree seeds as well. What do we do with all these seeds?

Here we can profit from the proven merits of the traditional farming systems.

One crop combination still practiced today is that of intersowing millets and pulses and oilseeds. We need to bear in mind a few things :

a) Knowing that when plants mature they return certain nutrients to the soil (e.g., potassium), we should aim at a combination which makes for another plant to come into flower (when the metabolism is high) when the first crop is mature or has been harvested. For e.g. in a combination of barnyard millet (4 month) and kodo millet (6 month), only the ear heads of the first crop (barnyard millet) are cut. The stalks and the rest of the whole plant is left in the field. Gradually, the stalks disappear into the greenery of the kodo millet.

b) It is also known that plants have their own preferences. You know that maize likes beans and cucumber. Tomatoes go well together with onions and marigolds. Lemons like casuarina and Tulsi as companions. In orchards keep also some 'wild' cultivars of citruses, mangoes, apples or whatever fruit trees are being grown. The robust, resistant 'wild' strains will help the cultivated varieties in their struggle against pest and disease. On the other hand, don't plant beans and onions together as they don't get along at all. The insects that attack carrots will be chased away by the insects attracted towards leeks and vice versa. So plant these two together.

c) Some plants have leaves that are very difficult to decompose e.g., cashew leaves. By intercropping these with 'soft' leafed species, preferably leguminous species, we obtain a balanced mix which improves the composition of the leaf litter, thus improving the turnover of the organic matter.

d) A last point is that of root penetration. Not all plants feed from the same depth in the soil. Some plants go deeper than others. Uproot a few plants carefully after a good rain, study the root systems and you will see.

Often not understood is the usefulness of weeds. Here one can make a distinction between grasses (family of Gramineae) and weeds. The grass can be pulled up from the fields to feed the cows or can be recycled with other weeds as mulch or directed to the compost pile. But some weeds are very useful not only because of their medicinal value but because of their deep burrowing tap roots. The weaker root systems of the cultivated plants can profit by the back-breaking labour of these subsoiling weeds, by just following their roots deep down in the subsoil where there is moisture. Learn about your weeds! One or two of such weeds per square metre is highly beneficial for your crops.

In South India we can see thousands and thousands of Celosia argentea, a plant from the amaranth family, with white coloured tops, growing in the black gram, sesame or ragi fields. These weeds go very deep in the soil, opening the subsoil for moisture for the crops. On top of that, the subsoil moisture can rise much easier towards the surface in the early mornings. The same crop of weeds will provide some fodder for the roaming herds of goats and cows when the harvest of black gram, ragi etc. is over. These plants equally function as a green manure, using residual soil moisture, preventing the leaching of valuable nutrients. Finally the dried out Celosia argentea plants will be plowed back in the soil early next season, their seeds waiting to germinate and do their work again. Farmers of old knew all this. It is a pity that such a boon is now considered a curse by the present day farmers.

What about the grasses?

Alley cropping involving glyricidia, cowpea and maize

Grasses should be planted on boundary or contour bunds. They have their role to play in soil conservation and they provide fodder for the animals. Cenchrus ciliaris and Cenchrus glaucus are such wonderful dry land grasses. Select good, drought resistant fodder grasses from your area, and plant them on the bunds. The grasses will check soil erosion, help percolation, even act as a windbreak. But mainly a row of grass will be an ideal place for earthworms, for all macro and micro fauna to live and thrive.

Alley Cropping

A very interesting integration in our farming system of perennial plants – mostly leguminous – gives rise to what is called alley cropping.

Every two or three meters, or according to the inclination and need of the land and the farmer, a hedge row of perennial Pigeon pea (red gram), Gliricidia, Sesbania egyptica, Mundelia suberosa, Tephrosia candida, or any such shrub that you might find in your area is planted. These plants are allowed to grow undisturbed in the cropped fields. These form the alleys.

Between these hedge rows, crops are sown. Then, the hedges are cut back and the twigs and leaves are used to cover the freshly sown fields. This mulch layer will conserve moisture and when the cut twigs and leaves decompose or are eaten by earthworms, they become extra nutrients for the field crops. During the cropping season, the hedges re-sprout and maybe cut back once or even two times more. Each time the foliage can be recycled as mulch for the standing crop. One does not need to put these clippings neatly on the soil. One can just throw them carelessly between the plants. The cut leaves will soon shrivel in the hot sun and the wind will finish the task of depositing the cut leaves on the soil surface.

It might be necessary not to prune the hedge plant completely, but to keep one twig or branch, to keep the hedge plant alive and to hasten the recovery. When the crops are mature and are harvested, then the hedges are allowed to grow undisturbed during the whole period of the dry season. Like this, as the summer advances and it becomes hotter and hotter, the fields become greener and greener!

One more thing, creepers can also be grown in the alleys. Their growth is also checked during the cropping season, just like the hedges, but in the dry season, these creepers are allowed to spread out covering the area between the hedges. Some Canavalia species do this job very well. Many other plant species could be used. The principle is that the soil should be covered for a maximum period of the year, but mainly so during the hot and scorching summer months. In a way, this is a way to green manure in the dry season!

And last, trees having deep tap roots and few surface roots can also be planted in the alleys. Hardwickia binata and Pterocarpus santalinus are such trees that do not form a spreading canopy and the side branches can be lopped for fodder. Their wood is very valuable timber! Other trees that might be planted in the fields at appropriate distances are Acacia nilotica var cupressiformis, Acacia ferruginea, Terminalia tomentosa and Prosopis cineraria. The latter forms part of the traditional agroforestry system as can still be seen in Rajasthan.

No need to mention that a fruit tree, such as mango or jackfruit, planted in a corner of a field will keep the farmer going through years when his crops might not be so good.

A tree in a field can be seen as a savings account. You set aside a little bit of crop space for the tree, and in due time collect your benefits hundred-fold.

But this is not all that the alley system can offer us. It has more possibilities as well. Consider having a trench in the alley. This trench can direct excess rain water towards water harvesting ponds. Even in 'drought' years, very heavy rains can occur. Rains of more than 20 cm. a day are very common in the tropics, while there might be as much as 3 weeks or more between successive rains. This rain water harvesting system might not work so well in very sandy soils, but in loamy or clayey soils, this can surely be a real boon to dry land farming. Water harvesting ponds will need to be lined with silt or clay, except in heavy clayey soil itself.

During periods of stress or during critical stages of plant growth, such as emergence of the seed, tillering, pannicle initiation or around flowering time, water can be recycled in the dry land alley cropped field (through the same trenches). This, of course, would need a pumping device, some pipes or cleverly designed water distribution channels. It is not the intention to irrigate the fields, but to keep the soil moist, preventing it to dry out, to keep the water element on the land or to provide a protective or life saving irrigation for the standing crop. One irrigation at the needed time can double the harvest or make the difference between success or failure.

The Regreening of the Village Commons

Before we can successfully start with alley-cropping or agroforestry systems in general, it becomes necessary to address two very essential points :

- one is the need for fodder and affordable concentrates;
- the other is the need for fuel, firewood.

When these crucial factors are properly dealt with, then there should not be those impossible problems with grazing and chopping.

But how do we improve the fodder and fuel situation now?

The most obvious, foremost and urgent task is to regreen the village commons and wastelands. The so-called grazing lands are in dire need of regeneration. The major problems here are not technical but of a socio-political order.

Practically speaking, the available common lands can be divided into zones. If one zone is fenced off and protected while, in the other zones, grazing etc. can continue, then it becomes possible to make these common lands productive again. In the fenced off areas, some fodder grasses such as, Cenchrus, or fodder legumes like Stylosanthes hamata, or fodder trees can be sown or planted. Fast growing pioneer trees must be planted to provide firewood within a time span of 2 to 3 years. Once there are trees specially grown for fuel, people tend to leave the other indigenous vegetation alone, and almost always, a tree cover re-appears at an amazing speed.

Once this area which was fenced off first starts to produce grass and fuel, a second zone can be fenced, protected and re-generated. More and more different species can be planted – for poles, construction materials and other small forest produce, including medicinal herbs and tree pulses!

Certain Acacia species produce edible seeds of high nutritive value. Acacia holosericia (now colei) and Acacia tumida are such examples. At a spacing of 3 x 3 m., an Acacia holosericia can produce 1 to 2 kg. of seeds per tree from the 3rd year onwards. These seeds can be eaten in a number of ways. The easiest is to mill it and mix the flour with ragi flour or wheat flour etc. If one does not feel ready to eat these seeds one can still feed the seed meal to the milch cattle. A first grade animal feed at your doorstep!

All this of course, involves considerable effort and contribution from the people concerned. They will have to cut the grass themselves and feed it to the stall fed animals, instead of the cows grazing and getting the grass themselves.

But it is worth the efforts. It will be very rewarding and further benefits will come about unnoticed.

Erosion destroys dry lands, fills up water bodies and reduces the irrigated areas. Dwarf varieties produce less fodder, hence higher stress on grazing lands, which in turn enhances erosion, siltation, reduction in irrigated areas, leading to less fodder availability and so on.

Each bund made, each tree planted, each little positive action from our side has its repercussions on the whole system. A bund holds back soil and water. Water infiltrates the soil, and vegetation profits by this. So does the water table. Springs will rise and water will flow to the tanks for a longer period. Trees will help the water to infiltrate and to rise up. They will bring up minerals from the sub-soil and deposit them through their leaves on the soil surface. They will produce fodder and their twigs and trash can be used to start the cooking fire. This will save dung from being burnt. Dung is needed for soil life.

II. SOIL LIFE

One can say that the soil is born, matures and eventually dies. The dying of the soil is seen everywhere, it is called erosion.

How can we improve soil life in our fields ?

To do this we must understand that the soil is actually alive. We do not seem to realize this. At the most, we remember something about earthworms.

As a matter of fact, things have evolved (devolved!?) so much that some farmers consider earthworms to be harmful and believe that they eat the seeds and young seedlings! Many times farmers have been seen throwing hard chemicals to kill-off all possible earthworms! Difficult to believe, indeed.

The Macro-Organisms

Go to the nearest tree on the roadside, brush some leaves away and immediately you will see small black creatures running away, looking for shelter in the darkness under the litter. These are part of the macro fauna. These creatures constantly move about under the leaves, chewing them, burrowing in the soil and depositing their excrement.

Two macro-fauna species are of immediate concern to us – the earthworm and the termite. The earthworm can be active only during the relatively short rainy season. But the white ant is active for most of the year! Its beneficial action for the soil is even less understood than that of the earthworm.

Let us look closer at the earthworm first.

It has three major functions. One, it opens the soil by making burrows, thereby facilitating the infiltration of air and water. These burrows will readily be colonized by the hungry and thirsty roots of plants. Two, it neutralizes the soil pH. In acid soils calcium is in short supply. The earthworm has special glands which secrete calcium. When the soil pH comes close to neutral, it becomes easier for plants to extract nutrients from the soil. Earthworms eat and digest the soil, mix it with organic matter and throw it out in the form of castings. These little heaps of earth are the only fertilizers we need.

Now, the termite. As mentioned, the termite is active almost all through the year. It takes organic debris down into the soil and brings up or covers its 'food' with soil. This soil has been mixed with their saliva and is very much richer than ordinary soil. Then, their excrement and dead bodies all contribute to the development of the soil. The numerous tunnels they make, act as ducts for the water to percolate into the soil and for air to circulate. In tropical rain forests, the soil seems to consist of termite excrement only and is so porous (80% air) that it can absorb the heaviest of rainfalls imaginable! Roots of plants can also follow termite tunnels.

It is generally believed that termites will eat or kill the seedlings. This might be so if there is nothing else for them to eat. But if this was so there would not be any forests at all because we find the highest density of termites in the forests! Usually termites 'eat' dead wood, dry organic matter and some grass. With this material they cultivate their gardens (organic farmers they are)! In their gardens they grow mushrooms which is their source of food.

Especially in the reclamation of wastelands, we should do all we can to attract these tireless restorers of fertility – the white ants. These were some of the important macro-fauna species.

The Micro-Organisms

Now there is a very vast domain of tiny little creatures known as micro-organisms, without whose help, we could not even live on this planet. There are very few who spend their energies on studying and understanding the secret life of micro-organisms. Even if they are studied, it is done in a most cruel and debasing way that only shows how deep mankind has fallen. Microbes are the unsurpassed chemists of creation. They can tackle any problem, disintegrate even radio-active waste! But we do not give them opportunity or time. By using organic manures (compost, especially vermicompost which consists mainly of micro-organisms), covering the soil with mulch, introducing hedges or other wind-breaks etc. and by applying certain rock powders, we can enhance the growth of micro-organisms in the soil.

One gram of soil can contain 10 million or more organisms! Of course, there is a strong link between the macro-fauna and flora, and the microbes. The better the presence of macro-fauna, the better will it be for the micro-organisms. Also, they form an intricate community, each one helping or depending on the other (or eating them). It is a chain and we should not break any links in it.

But what else can we practically do now to improve the number of organisms in our soil ?

We can culture them separately and then inoculate our soil with them. Bio-fertilizers or bacterial cultures are now available almost everywhere in India. Unfortunately only a few organisms are being mass multiplied. Very often the cultures are not up to the standard also...

Some of the most useful cultures are azotobacter, azospirillum and phospho-bacteria. The first two are nitrogen fixers while phosphobacteria help in solublising available phosphorus. There are others like acetobacter specially for sugarcane. There are many others as well.

Another group is the symbiotic organisms called rhizobium cultures. They are used in leguminous crops like peanuts and pulses. One can inoculate seeds as well as the soil with these cultures. If good agricultural practices are followed, inoculants should not be necessary after 3 years of use.

These cultures are especially important for farmers who are shifting towards organic farming. Through the use of dangerous chemicals, soil life has received a severe blow. Fungi especially suffer a lot and they are needed for decomposing lignin in the leaves and twigs of plants. So organic matter might not decompose properly or easily in soils which have been treated with fungicides. Hence, when composting, such fungi can be used, e.g. Trichoderma veridi, Pleurotus and Aspergillus niger. Such organisms are used to decompose coconut coir.

For phosphobacteria, it is good to use rock phosphate with it. About 40 to 80 kg. per acre is enough.

Of course, there a huge number of bacteria that are of importance for soil, plant growth and health.

Plants, specially trees absorb water and nutrients with the help of small micro-organisms which are called mycorrhiza. These are root fungi. They live in symbiotic relation with roots of plants. One of the common mycorrhiza is the puff ball or Pisolithus tinctorius. The puff ball which we see is actually the fruiting body of the fungus and it contains the spores. These, when mixed and stirred in water, can be used for sprouting seeds or irrigate young saplings. This is specially needed where re-forestation of very denuded and degraded areas is done. Be careful not to inhale the spores of the fungus as it will cause severe irritation. Some other mycorrhiza are known as VAM (vesicular arbuscular mycorrhiza). It is very difficult to multiply these mycorrhiza as they are host specific. One simple method to collect VAM is to look for a good 'mother tree' in some forest grove, dig up some of its small roots, and collect the soil where you find the tiny hair roots. This soil, with some of these tiny roots can be used as inoculant. For teak trees, use the 'teak' inoculant. For Pongamia, use the 'Pongamia' inoculant and so on. All these organisms live in the dark of the soil, so never expose your inoculant to the sun and use immediately. Best is to use the inoculant with saplings as mycorrhiza develop only in the presence of roots.

Actually, the best thing is to have a wild grove here and there, a place undisturbed by man. When we collect soil from such a place, we are sure to get an interlinked chain of micro-organisms which functions far more efficiently than some isolated cultures. But in order that the micro-organisms can do their work effectively, we should follow nature's rules, as much as possible, in our agricultural practices.

Interview with Bernard Declerq

Claude Alvares: Looking at the organic farming scene now, what are the differences that you see from the time you started and today, in terms of the awareness among the farming community, particularly in terms of the skills they require for organic farming?

Bernard Declerq: There is a major shift in the approach. Earlier, the idea was more of traditional farming, now it has come to innovation in farming. Farmers have gone much beyond merely copying organic farming practices – they are now creating new traditions in farming with a lot of innovation and creativeness, which is really wonderful. Other people are turning their eyes towards organic farming because the results are there to see. So it will become very difficult now to negate the farmers' movement.

CA: I've also found that every organic farmer is different from the other which means that the personality of each person, his thinking is stamped on his farm. This is very different from the earlier times when he did not think but merely applied chemicals and he went to the scientists for advice on what to do on his farm.

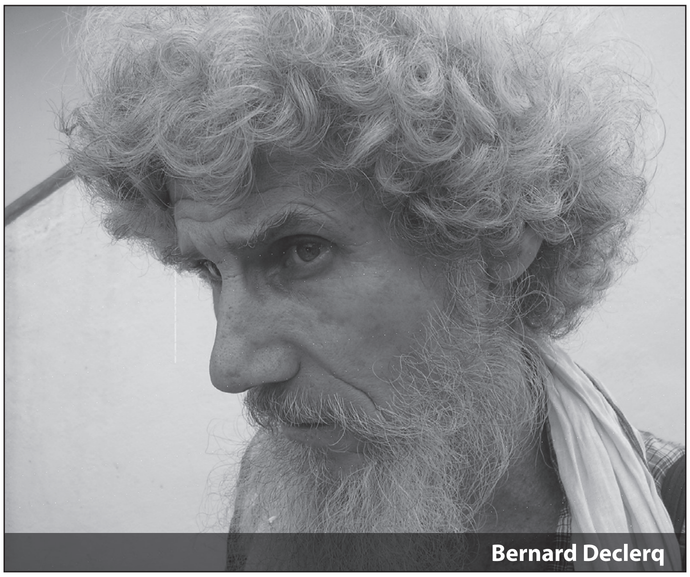
BD: That happens when the chemical hypnosis falls away – farmers discover their own again, their fields, seeds and animals. That is also the difference between organic farming when it started and organic farming now. The original inertia of the movement is gone and the momentum is being fuelled by preparations like Panchagavya and all sorts of other preparations for this and for that. There is a momentum, the number of farmers who have turned themselves to organic farming is growing and growing considerably. Everyone is looking for some alternative to modern or green revolution agriculture.

CA: Do you think we are in a capable position now to answer the usual skepticism of people that organic farming may be okay but it cannot satisfy the food requirements of this country and for that we need chemicals?

BD: I think this superstition may last for a long time. But in any case the green revolution farming did not feed the world either. Just look at the FAO figures for starvation and malnutrition. It doesn't matter what these people say or think. What matters is that more and more farmers are doing organic farming while the skeptics can continue to talk till the cows come home. The farmers are practising organic farming with these wholly new concepts and understanding of nature, plant, man, life in the soil. The critics remain at the abstract level, flying from one conference to the other, ten thousand feet in the air, above the farmer's head. Does it really matter what their opinion is? What matters is what is happening on the ground.

CA: Do you think that the farmers finally have some understanding of what is happening in the soil?

BD: There are two ways of looking at this. One is the way in which the scientist would look at the soil, even in the organic handling. I am not saying that it is all wrong but in any case it is not the complete truth. It is a long standing paradigm of science to look at the most visible, outward, material part of the plant as if it were a machine, composed of chemicals, etc. but the living is so complex that always something will escape their equation.


Bernard Declerq

Farmers normally do not look at a plant or soil in that way. So they are exposed to other streams coming to them which are away from the linear or 'scientific' thinking about plants and life in general. So the farmers are bringing back a whole new way of understanding things. This is the beauty of what is happening. The same spirit which was behind the older manifestation is now manifesting itself in a new form. That is what had to happen, and it will continue. Look at the Madagascar method of rice growing, what a thing: IRRI, what have you done?

CA: Some of the farmers I have talked to say that they have found the 'final solution' which is just concentrating on the soil and everything else will take care of itself.

BD: Yes, that is true. But there is no one final solution. We keep on growing. We are moving forwards. The soil is so complex, life is so complex that you can't know everything. You can try but there will always be more to learn and understand.

CA: In your opinion what are the aspects where organic farming is still weak, even today? What are the gaps, the deficiencies, the blind spots?

BD: According to me, the blind spot is mainly the seed material. People are still ignorant about hybrid seeds, improved varieties, genetically modified seeds, etc. Everybody discusses GM seeds, not really knowing why or what is wrong. Or they have only some moral arguments against it, which is of course very valuable. A lot of work still remains to be done here especially by communication among key farmers. It is only farmers who will convince other farmers. Earlier, the issue of indigenous varieties was largely at the NGO activist level. But an activist does not cultivate crops, he cultivates his papers and his intellect, but not the land. So this communication from someone who is on the land will be more potent, more direct, and in a language that the farmers can easily understand and not in the difficult technical jargon. This communication should happen in different countries but eventually the movement has to become global. The planet is a common environment.

CA: What is amazing is that they managed to get all these *people to accept the green revolution, these farmers of 5000 years and so on who could change overnight to chemical farming*

BD: I was trying to understand this whole movement of chemical farming from the beginning – how it came about, with its various hybrid seeds, improved varieties, green revolution chemicals, all agrotoxic substances. It became clear in my mind that it is the whole collapse of one civilization into barbarism. It started with eradicating indigenous people, their culture and belief systems everywhere, then with annihilating and damaging the plant world, creating new technologies for destruction and so on. Ninety per cent of all the scientific research is for destruction. All the technology is for destruction, for military purposes. Use more computers and technology to destroy the lands and oceans so that we can make money faster than before. With all this science and technology has the planet become better, the air cleaner, soil richer and water more abundant? Are people healthier? Are the pharmaceutical companies closing down and doctors on the street?

When Liebig came up, there was also Hensel with his stone dust and he also found out that if you put rock powder and stone dust the plant seemed to grow more. There were some drawbacks: they didn't know much about soil microbiology then, how rock dust precisely worked and there was no industry that could provide a lot of this material. So although Hensel did a lot of work and a lot of farmers had better results than with any chemicals – there were comparisons which had been studied very carefully – yet Hensel's book was burnt and Liebig's chemical theory came up. Even when Liebig himself tried to stop it he couldn't because Farben and all those big companies had already developed their interests in the production of chemicals.

At the same time, at the beginning of the twentieth century (1910) we started to rediscover Mendel. And then in America they began developing hybrid seeds. Why hybrid seeds? Because control is in the hands of industry. If the farmer can buy open pollinated seeds, then everybody can multiply them and one doesn't have to go back to the same shop to buy the seeds again and again. They have used the genetic rediscovery to make the hybrid seed. All efforts are for hybrids, but the word 'hybrid' is Old Greek for monster! There is no more upgrading of open pollinated varieties, so they remain behind. What is the result of hybridization? Uniformity. All plants are genetically limited and identical, they are clones, with all the problems that come from that. In the years before the World War II, the increment of production in maize was 18% (maize was the first plant to be hybridized). But in wheat which was not hybridized the increment continued to be 32%. The plants are engineered to ripen at the same time, all the same height. It is ready for the machine. Weaker plants with a narrow genetic make-up fall prey to pathogens and need toxic sprays. A conspiracy at all levels, grown out of this greed, plunder of human resources and plunder of natural resources. A collapse of a civilization at the height of what the West thought as its peak, into barbarism. It has created the First World War and the Second World War. The first war discovered the means to fix nitrogen for killing people, which immediately later has been used to kill the soil. The agricultural machinery, as Claude Bourguignon said, is also war machinery. It was made in the same factories where the war material was made. With dependence on fertilisers, genetically weak varieties, pesticides, etc., we become the miserable bonded labourers for the wealthy agrotoxic companies.

In the tropics, the ecological conditions create a rich biodiversity. Even in a species like rice you will find thousands and thousands of different rice varieties in India, Sri Lanka, Philippines, etc. It's a rule of nature. But the green revolution comes and you have IR36 on 11 million hectares! It is insane, not even rational. Of course this cannot work in the long run as it is going straight against the rules of nature.

Then, very cleverly, they have reduced the size of the rice plant so there is much less straw, less fodder for the animal, the animal population collapses and then there is no dung for fertility. So we have to buy fertilisers. Chemicals fertilisers burn organic matter very fast. Some microbes get stimulated by nitrogen and they destroy organic matter to obtain minerals for their bodies. The soil becomes stiff and ploughing it becomes increasingly difficult. All ploughing is then done by tractors and the bulls have then become redundant. Machinery has taken over. When machines take over, the soil gets destroyed more and more. And then finally, the yields start decreasing. Now they are in a total mess and so they come up with fake science of genetically modified crops as the new saviour of hunger problems in the world, while in reality they feed only the big agrotoxic multinationals. What they don't see is that genetically modified organisms are the last and lowest step in this machinery of collapse.

Against all this, you see the people's movements, reappreciation of indigenous people, the feeling of sacredness, moving beyond established religions, people see again that there is something in nature that is sacred and so many scientists like Emoto, Higa and Bourguignon acknowledge this, there is a spiritual reawakening. Even with people who are non believers in traditional things.

CA: Now some knowledgeable people speak out against GMOs

BD: Biological means of selection are superior to hybridisation because hybridisation weakens the plants by inbreeding.

Farmers should realise that by selection they can adapt crops to their conditions and outperform commercial seeds. They talk about anti-oxidants in food stuffs and it is the new trend now that agro chemicals contain a lot of oxidising substances and the GMOs are very oxidising. Look at this local tomato grown here in our garden. It will keep for 3 months without a fridge because there are so many natural anti-oxidants in it and after that it will slowly dry up for another 3 months but it will not rot. The food that we buy in the market sometimes does not last even in the fridge for 2 days. When you slice a potato you will find some brown lines, this is rust, rotten and full of oxidizing substances. And we are eating them. The diseases which we get are due to the fact that there are too many free radicals, too many oxidizing substances in the environment and in our food – eventually it will affect human health and human behaviour.

Bhaskar Save: Trench Farming

Bhaskar Save

'Present day farmers labour under basic misconceptions. It is thus helpful to understand what plants actually need, how much, where, when, and how.'

What and How Much?

Touching upon a common misunderstanding, Bhaskar Save clarifies that the organic manure added to the soil is not a food of the plants. It is a food of the soil-dwelling organisms whose digestive processes progressively decompose the matter into inorganic mineral form. The nutrient-rich excreta of these creatures must then dissolve in moisture, before it can be absorbed by the roots of plants.

More fundamental yet is the misunderstanding about how much of the minerals are needed. The plants – as Bhaskarbhai never tires to emphasise – are in fact 'mitahari', or very small consumers of the mineral nutrients in the soil. Air, moisture and sunlight are the main requirements.

Since the tropics and sub-tropics have an abundance of sun, it is the porous, humus-covered soils that absorb and hold more air and moisture, which are the most productive in giving a sustained high yield of biomass. This is common ancient knowledge, though less understood these days.

'Hold your nose, shut your mouth and time yourself,' says Bhaskar Save. This is the fastest way to realise and remember that air, which we take for granted, is the most vital requirement of the human body. Similarly, the roots of most plants – and the aerobic organisms that live around them – require non-stop aeration in the soil. This is ensured in nature by the tilling activity of the earthworms and many other soil-dwelling creatures that keep the earth porous.

It is however important to remember that though the principal needs of plants are originally derived from air and moisture, a considerable part of these may be drawn via the soil and the root system. Hence, the physical condition and absorptive quality of the soil is far more vital than its chemical composition that is over-emphasised by modern agriculture.

The Problem with Excess Water

Another widespread misconception of farmers today is that plants require a lot of water. The consequent practice of irrigation-intensive agriculture has proved disastrous to the land. In fact, says Bhaskar Save, the large majority of plants are most healthy if the soil is just damp or moist. Notable exceptions of course are wetland species like the mangroves, adapted to flooding.

Among commonly consumed food crops, rice – which is a semi-aquatic species – is the only plant that can grow well even where water accumulates. It is thus the natural choice as monsoon crop in low-lying areas, though upland varieties of rice also exist in the hilly regions.

In the case of most other crops, an excess of water suffocates the root system by driving out the air contained in the many little spaces between soil particles. Root respiration is stopped, disrupting photosynthesis. And prolonged flooding causes root rot, increasing the susceptibility of the plant to various diseases and pest attacks.

Bhaskar Save adds, 'It is significant for farmers – and advocates of big irrigation schemes – to note that thick forests are often found on well-drained mountain slopes, as in the Himalayas or the Sahyadris. The rain water on such steep terrain largely flows away by gravity, thereby allowing uninterrupted soil aeration. The soil too is subject to high erosion, particularly during heavy showers of the tropical monsoon.

'In many parts, the mountain slopes may have 95 per cent rocks and stones, and barely 5 per cent soil. Very little rain water is accumulated anywhere within reach of the roots. Yet huge, old trees thrive on such land. What could be more eloquent testimony of how frugal are the needs of plants.'

In contrast to the mountains, the land in low-lying river valleys and plains may have rich soil with few rocks or stones. But because such regions are prone to water accumulation from the rain water run-off of higher lands, the roots of the trees here suffer from poor soil aeration.

Following the example of natural forests, if there is dense, multi-storey vegetation on a farm, its large surface area of cool, green matter can maximise the daily condensation of air vapour as early morning dew. Micro-climatic humidity remains high, since the thick shade and the protection from wind reduce return losses of moisture through soil-surface evaporation or transpiration by the under-storey plants.

The moisture in the air below the tree canopies is also directly absorbed by soil humus. Thus, just a little irrigation provided occasionally can be quite adequate for maintaining dampness in the upper soil, combed by the 'active' root-fibres of plants that form the upper 'crown' of the root system.

Where the porosity, or internal pore space of the soil is high – as in all good, living soils characterised by a granular, 'crumb structure' – this enables it to hold enormous reserves of air

The Use and Discontinuance of Chemicals

After the end of World War II and India's independence, a good market developed for the supply of vegetables to cities like Ahmedabad and Mumbai. And so in 1951, Bhaskar Save gave up his school job and took up full-time farming on his own, beginning with a holding of 2 acres.

Around this time, the use of chemical fertilizer was just beginning to spread in India. Allured by the apparent advancement of Western technology, this was the method of farming he now chose to adopt.

Young Save read whatever he could find on the subject in Marathi and Gujarati, and carefully experimented in small plots. Soon, his became a model demonstration farm. Several agricultural scientists from Pune and Mumbai frequently drew on his experience for conducting their field trials. Bhaskar Save even took up an agency for marketing chemical fertilizers.

Within a few years, however, he realised that he was having to use more and more inputs, and thus incur more expenses just to keep the yields from falling. He decided to investigate what would happen if the chemicals were stopped. In the face of opposition from his family and friends, he reverted to organic farming on a small part of his land.

In the first year, there was a sharp 50 per cent fall in yield, but Save calculated that his expense on this plot was barely 20 per cent of what it was earlier. As a result, there was no marked decline in net profit. In the second year, the yield from the organic plot rose to 60 per cent in comparison with the other plots, while costs declined to less than 15 per cent.

The gain in net profitability was now significant. Encouraged by these results, he progressively converted, each year, some more of his land to the organic method. By the early sixties, chemicals had been totally stopped in the entire farm. In the years since then, he has never had any cause for regret, as yields have steadily improved, while costs have continued to fall.

Some years ago, an old Sarvodaya leader from Gujarat suggested to Save that he recommend to farmers to reduce their dosage of chemicals, instead of stopping them altogether. Bhaskarbhai however reasons, 'a smaller amount of chemicals may be less harmful than a large dose, but is nonetheless harmful. The land will continue to worsen, though less rapidly.

'The turning point, where this process of destruction stops, and the soil begins to regain its health, can only be reached by totally stopping the use of what is poison to the organic life of the earth. Therefore, the micro-organisms, earthworms, etc., will gradually regenerate, rebuilding the humus of the land. This is the very basis of soil health, without which healthy plants and wholesome food cannot be grown.'

'Moreover,' says Bhaskarbhai, 'try telling an alcoholic or a habitual smoker to strictly restrict his consumption to a small amount. It does not work. The restlessness he initially feels draws him back to increasing his consumption once again.

'By destroying the natural fertility of the soil, a similar dependence is created on the continued use of agro-chemicals. Any reduction in the quantum of inputs inevitably results in a decline in farm yield. A farmer worries that he has used too little, and increases the quantity. He is unlikely to conclude that he should further reduce the dose, or totally stop.

'Most of the farmers using chemicals, with whom I have discussed this, can clearly see that they are on a downward slide. But barring a minority, they seem to lack the confidence of changing their way of farming.'

'My suggestion to them is that they should make a start by totally stopping chemicals on a small part of their land. In the very first year, even if the yields fall by over 50 per cent, the correspondent saving in costs will ensure that there is no significant net loss. By the end of the second year, the improvement in net profit is very clear.'

'I tell visiting farmers: please do not blindly imitate me. I may be wrong. Or what I am doing may be right in my conditions, but not in yours. Unless you use your own observation and intelligence, you will continue to make mistakes without learning from them. But if you reflect ten times before interfering with nature, you are safe.'

Bharat Mansatta

* * *

and moisture. Such a condition – known as 'wafasa' – where both dampness and air are simultaneously present, is ideal for plant growth. With too much water, the 'wafasa' is destroyed.

Where and How? The 'Platform-Trench System'

A common error of horticulturists, says Bhaskarbhai, is to provide irrigation right near the tree trunk in a sunken 'basin' all around it. If instead, water is provided only near the outer reaches of the lateral roots, this reduces the dissipation and evaporation loss (and consequent salinisation) that accompanies the flood irrigation of a larger surface area.

More importantly, the correction enables non-stop aeration and respiration near the concentrated root crown zone immediately surrounding the trunk, and lying close to the soil surface.

Bhaskar Save has thus adopted the platform and trench system of irrigation, which greatly increases the efficiency of water utilisation. The trenches – about one or two feet wide, about 12 to 18 inches deep, and well mulched – serve as irrigation channels. They run on either side of the rows of trees, and take up barely five to six per cent of the area of his mature orchard.

In relation to the two parallel trenches on each side, the land between them is thus like a raised 'platform' on which the trees and shrubs grow. The system is essentially modelled on the natural, undulating terrain found in areas rich in tree growth. It enables excess rainfall to drain away without accumulating around the trees.

In the dry months when irrigation is provided in the trenches, the plants draw their moisture requirement through their outer root tips and fibres. No water needs to be provided to the remaining 95 per cent area of the orchard, i.e. the platforms on which the trees and shrubs grow.

The platform and trench system of irrigation also encourages the roots of trees to spread to their maximum natural limit to obtain the moisture they need. Such a wide spreading root system is important for the tree in two major ways.

One, it provides greater stability and weight-bearing capacity, enabling it to withstand rough storms. But just as significantly, the wider reach of the roots enlarges the area a tree can draw upon for its moisture and nutrients – a factor critical during times of drought.

Hence, Bhaskarbhai cautions that a farmer should not be like an overpampering parent who unwittingly encourages laziness. By regularly serving water and manure close to a tree, he removes the need for it to spread its roots to help itself. The dependence created then becomes a handicap in later years. The trench method avoids this error.

Considering that irrigation is provided to a very small surface area and sinks under the shade of the mulch, before being rapidly absorbed by the sponge-like, porous soil, it is easy to see why wasteful evaporation losses or salinisation are almost totally avoided at Kalpavruksha. In the monsoons, a good deal of the over 80 inches of rainfall is also soaked up and held by the earth.

When the soil becomes saturated, the rainwater percolates into the aquifer or underground water table. And during prolonged, heavy showers, the excess water flows away through the trenches. These then function as drainage channels – which are particularly important on flat terrain – preventing water accumulation; near the surface of the soil, where the active roots need to breathe continuously.

At Kalpavruksha, the irrigation in the trenches is released through a 2 inch pipe fed from the well by a 3 HP pump. The pump is operated barely 4 days a week for about 6-7 hours each. The average daily water consumption thus works out to approximately 12 to 15 litres per tree, or barely 1,000 litres per acre.

This modest amount of protective irrigation is considerably less than one-tenth of the water consumed in most modern farms growing cash crop monocultures with the use of chemicals. It is also less than half of that in an orchard fed with an expensive drip irrigation system that needs periodic cleaning of drip outlets clogged with salts.

Most significantly, the total amount of ground water withdrawn from the well at Kalpavruksha during all the months of no rain, is less than the amount recharged to the aquifer or water table during the monsoon. Thus the farm is a net supplier of water to the ecosystem of the region, rather than a net consumer.

The mulch or manure laid in – or near – a trench decomposes in the presence of air and moisture under the action of soil bacteria, earthworms, etc. The mineral nutrients in the rich, natural compost that are ceaselessly churned *in situ*, then dissolve in irrigation water or rain before being absorbed by the fibre hairs of the roots by a process of osmosis.

Most important of all, there is no tillage or cultivation involved in supplying the needs of the trees. Any such tillage is futile toil that injures the organic life of the soil, and the root system of the plants. Many miles of delicate fibre hairs of roots grown over months may be lost in a single hour of working the soil.

The inter-trench spacing or ‘platform’ width in an orchard at any point of time depends largely on the nature and age of the trees being irrigated, or more particularly on the existing spread of their roots.

At Kalpavruksha, the big trees like chikoo and coconut are over 30 years old, and their canopies and root systems have fully covered the ground. Since the original plantings in most plots were done with an inter-row spacing of 24 ft, the trenches are now in their final position midway between two rows of trees (about 12 ft from each), and feeding both.

The trunks of the big trees are correspondingly seen along the centre-line of 24 ft wide platforms. The root systems which spread beyond a radius of 12 ft can thus easily draw their moisture requirements from the parallel trenches on either side.

Small trees like the banana, the papaya, or under-storey shrubs like the kadipatta (curry leaf) and croton, having a smaller root spread always need to be closer to a trench. By a rough rule, the lateral root-spread of a plant is about as much as its overhead canopy.

If the spacing between 2 rows of big tree species is kept larger at the time of original planting – to allow for a larger natural spread without having to prune alternate rows – the final platform width or inter-trench distance will correspondingly vary. And in case the plantings are not done in straight rows, but in a circular pattern, forming a ‘Surya Mandal’, the layout of the trenches too will be circular.

In a newly started orchard plot, the trenches would obviously need to be close to the young saplings so that the roots can reach them. As the trees grow bigger, and their roots spread further, the distance of the trenches is accordingly increased in 3 or 4 stages.

In about 6-8 years – by when most of the big trees like the chikoo and coconut have matured – the trenches then assume their final position midway between 2 rows of trees. The actual time taken to reach this stage can vary somewhat, depending on the species grown and the condition of the soil.

When planning the trench system, it is also necessary to consider the slope of the land, and the position of the water supply source in relation to the plots to be irrigated. For example, where the land slope is more than 2 or 3 degrees, the trenches should always run along the contours, i.e. across the direction of the slope and never along it. This is to minimise soil erosion.

When?

Bhaskar Save has gathered a wealth of experience over the years on how much irrigation should be provided and when. He knows that as long as his croton ‘water meters’ appear cheerful, there is adequate moisture in the soil. If the croton leaves begin to droop in plots where young saplings are growing, he is alerted that he should soon supply water on the same day, or the next.

‘It is ridiculous to keep spoon feeding and tending mature trees like babies, instead of letting them get on with their natural role of looking after the environment, and us. In following the platform-trench method of developing an orchard plot, one must remember that as the young saplings grow into mature trees, their shade reduces evaporation losses.

‘The soil too is more absorbent than before, while the irrigation trenches are more widely spaced and fewer in number. Consequently, much less irrigation is needed than what one started with. The requirement of external manurial inputs is similarly reduced.

‘In like manner, as a tree grows older and develops wider roots, its dependence on inputs provided by the farmer should correspondingly decrease. This is because the extensive roots enable the tree to help itself from further and deeper regions of the soil for its moisture and nutrient requirements. Meanwhile, by following the basic principles of natural farming, the health of the soil should also have improved over the years, removing any cause for worry.

‘We should draw inspiration from the natural forests untended by man. Still, if we feel we must attend to our mature fruit trees, we may supply 5 to 10 per cent of the inputs that we originally provided when the trees were young. This is a commonsense principle of horticulture: young trees need more care, give less yield. Older trees need less care, give more yield.

‘Unfortunately, many farmers do the opposite of what is needed. The inputs are increased to 100 per cent or even 150 per cent, thinking that a bigger plant needs more, and that by providing more, the yield will be more. This is mindless oppression spurred by greed. The increased inputs are not only an utter waste, but are often counter-productive.’

Return to Nature

In contrast, the natural way of farming is conscious of a mysterious intelligence that governs all natural processes. Its golden rule is: ‘Avoid unnecessary interference’. But when greed dominates, it is difficult to have faith in the wisdom of nature. This is why Bhaskarbhai says that natural farming and spiritual health go hand in hand, each helping the other in a unified process of evolution that renounces violence.

‘Billions of micro-organisms miraculously appear when a seed germinates. The soil around it, even if previously in coma, comes alive. The first pair of petals that emerge look like tiny palms clasped in prayer, as though beseeching, “Please let us be.” It is for this reason that any tillage after planting is taboo in natural farming.

‘Even if a small part of the root system is damaged by tillage, photosynthesis drops significantly. Much of the solar energy gathered gets used up in the regeneration of the roots, leaving little for the development of leaves and fruits.

‘Moreover, where tillage is a periodic feature for supplying inputs around a tree, a strong, well-spread root system cannot develop. Any increase in weight through higher fruiting then becomes a hazard to the stability of the weak-rooted tree, and is therefore shunned by the innate mind that directs the growth of the tree.’

The Five Concerns of Farming

Bhaskar Save summarises his approach to natural farming with reference to the five major areas of activity that are commonly a pre-occupation of farmers all over the world. These are tillage, fertility inputs, weeding, irrigation, and crop protection.

Tillage in the case of tree-cropping is at most permissible as a one-time intervention to loosen the soil before planting. This too should preferably be done when the soil is dry, and its organic life has migrated to deeper layers. Thereafter, the work of maintaining the porosity of the soil should be left to the organisms and plant roots in the earth.

The recycling of all bio-wastes on the farm is an imperative for ensuring its continued fertility. Where farm-derived biomass is scarce, initial external provision of organic inputs is helpful. However, no chemical fertilizers whatsoever should be used.

Weeding too should be avoided. It is only if the weeds tend to overgrow the crops, blocking off sunlight, that they may be controlled by cutting and mulching, rather than by clean cultivation. Weedicides, of course, should never be used.

Irrigation should be conservative, not more than what is required for maintaining the dampness of the soil.

Crop protection may be left entirely to natural processes and the biological control of naturally occurring predators. Polycultures of healthy, organically grown crops have a high resistance to pest attack. Any damage is usually minimal, and self-limiting. At most, some non-chemical measures like the use of neem, diluted cow urine, etc. may be resorted to. But this too is ultimately unnecessary.

Do Nothing

While a formula approach is characteristic of modern agriculture, there is no substitute for direct observation in natural farming. Even an ‘expert’ following the basic principles of natural farming requires experience of the local conditions and plant varieties.

The natural farmer must adjust to the land and the climate. It is by trying to impose everywhere our narrow mind-sets on nature, that we find ourselves in such sorry straits.

Bharat Mansatta

Bharat Mansatta has been working on a full length book on Bhaskar Save and his agricultural work.

Interview with O. P. Rupela: Organic farming is serious science

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Other India Press: Dr. Rupela, what is it that bemoans the majority of agricultural scientific community that it is so reticent about accepting the established practice and science of organic farming?

O. P Rupela: Most agricultural scientists are trained in crop production and protection that require fertilisers and synthetic pesticides. Scientists have largely evaluated components used by practitioners of organic farming (OF) in isolation as a replacement for fertilisers and/or other agro-chemicals and that too, in most cases, changing the plot of land where they conduct such comparisons every year thus not addressing long term effects of these chemicals. The OF system that integrates trees, annual crops and animals in a farming system perspective using locally available biological resource has neither been studied in its totality nor in detail. It would be inappropriate and against the spirit of science to brush aside its potential based on inadequate study. Also there are certain myths that could be a cause for their reluctance.

OIP: Being one of them yourself, what then gives you the confidence to bat so strongly in favour of organic?

OPR: The days are gone when we scientists educated and trained to grow crops with agrochemicals, were acknowledged as 'final authority' on a given subject. Today, lakhs of farmers across the globe grow crops without these synthetic inputs, both fertilisers and pesticides. Also, there are historical evidences suggesting comparative yield of common crops during pre-British India, i.e., much before the chemicals were on the scene, and at present.

At ICRISAT, since 1999, the Biocontrol team carried out experiments on a large plot on a rainfed vertisol in semi-arid conditions. The experiments demonstrate that in seven out of nine years, the crop yields without agro-chemicals were indeed higher or similar to the treatments receiving agrochemicals.

Comparable or higher yields of cotton and tomato were also harvested in on-farm experiments involving seven to 21 farmers in a season, in two villages, using low-cost bio-options of crop protection consistently for four years in a row from 2004 to 2007/08 with technical expertise from ICRISAT. Partner farmers in these on-farm experiments paid Rs. 1500 to Rs. 1700 per ha, pro-rata basis, as cost of crop protection using the low-cost and biological options.

This scientific authentication, my interactions with practitioners and the fact that thousands of farmers' stories have been documented in India itself is proof enough for me to acknowledge the system's validity.

OIP: Would you say there is a preconditioning amongst the scientists, Government and farmers that is difficult to erase or overcome which is going against this grain?

OPR: The manufacture of fertilisers and pesticides – the two major inputs of Green Revolution technologies – needs fossil fuels and/or expensive energy, and is associated with serious environmental and health issues. If we are interested to make agriculture an environmentally friendly process and at the same time ensure to not put the food and nutritional security of a nation at risk, then we need to take a serious re-look at the protocols of crop production and protection. One may then have to begin with busting some myths regarding organic farming.

It is time we identify and promote use of agro-technologies that are environmentally friendly, empower farmers even while resulting in sustainable high yields.

Low cost and biological approaches of crop production and protection based on traditional knowledge of farmers and locally available natural resources being researched at ICRISAT since June 1999, following organic farming principles, have been noted to have these features. Most of the inputs needed for this approach can be generated on the same field where food crops are grown, making the need for external inputs close to redundant.

Agricultural scientists, however, do not believe that crop yields without fertilisers can be high unless large quantities of compost that supplies nutrients (nitrogen, phosphorus and potash – NPK in particular) equivalent or close to the recommended levels are applied. Another perceived impediment is that large quantities of compost are not available to farmers particularly when farmers are shifting from cattle-based farming to mechanisation.

Use of composts, green manure, etc., are considered as good practices and are widely recommended by the mainstream system, but always along with chemical fertilisers as 'Integrated Nutrient Management' or INM.

All crops are by nature potentially attacked by several different crop pests, both diseases and insect-pests. The emphasis has been mostly on the use of synthetic pesticides that are nervous system or respiratory poisons and are potentially toxic to environment and operators. Regretfully, most scientists are trained only in these options.

Use of botanicals and entomopathogenic microorganisms for plant protection are regarded as good practices and came into prominence after it was becoming difficult to manage several insect-pests that had developed resistance to several different types of synthetic pesticides. Most scientists – entomologists in particular – appreciate the importance of soft options of crop protection but promote them along with chemicals as part of integrated pest management (IPM), because of their belief that the soft options on their own would fail to protect crops.

It is unfortunate that in the whole scheme of crop protection from insect-pests, natural bio-controllers do not find a place except as recognition in the form of lip service that they are important.

OIP: You made a mention of myths?

OPR: There are some commonly held myths like:

(a) crop yields are low without application of synthetic fertilisers

(b) large quantities of compost are required for organic farming,

(c) crops cannot be protected without synthetic pesticides

(d) organic farming cannot be practiced on large areas,

(e) organic farming is labour intensive etc.

that render agricultural scientists averse to organic farming.

OIP: May we request demolition of these myths for the benefit of all readers, believers in organic or otherwise? To begin with the first, are crop yields low in an organic farming system?

OPR: Reduced yields in the initial years when a field is converted from conventional agriculture (CA) to following organic principles (OF) is a widely observed phenomenon, including in the tropics. Just because it is so, OF cannot be quoted as a low-yielder. A few years are initially needed to build the agriculturally beneficial microorganisms in soil that would have been adversely affected by long years of agrochemical inputs used in CA.

With scientific understanding of OF as a soil building process rich in microbial-activity, it will be possible to reduce this period to less than one year. Overall, it can be argued that sustainable high yields are possible with OF but scientists have not as yet explored it enough from a farming system perspective.

For most scientists, it is indeed difficult to believe that high yields are possible without synthetic agro-chemicals. All the 31 million ha (including forest produce) in the world presently under OF practices are certified, implying that it is possible to obtain names and addresses of the producers/farmers from accredited certification agencies in any given country. By the crop season 2006/07, a total of 485,000 farmers were registered in India itself. It is the duty of research institutes to exercise their scientific equanimity, access these names, visit these fields, examine crops and verify the claims by actual measurements.

There is also documentation of historical evidences in support of high crop yields prior to 1835 when modern agrochemicals were not on the scene. For example, the average yield of rice is quoted as around 3 t ha -1. The mean yield of rice was based on a survey from over 1000 localities in two independent records/studies: the first, writings on palm-leaves in Tamil Nadu (still available) and the second, survey reports of Thomas Bernard of East India Company. Mean paddy yields of well performing localities were over 6 t ha in one and over 9 t ha in the other study.

Mean yields of conventional rice these days in India ranges from <1.0 t ha -1 (labeled as very low productivity states, e.g. Madhya Pradesh) to >2.5 t ha -1 (labeled as high productivity states (e.g. Andhra Pradesh and Punjab). The average yield of Punjab in the recent past was about 4 t ha -1.

These comparative evidences should be an impetus to agricultural scientists to think out of box and explore how high yields were harvested in the past without agrochemicals and develop those technologies for wider use.

The major weakness of research on fertiliser recommendations is that these are crop focused and have generally been developed without considering the cropping system perspective of a given area and availability of natural resources.

Several OF practitioners claim that their yields are comparable to or higher than their neighbouring conventional farmers. My visits and interactions with several such farmers in the past five years have proved that these claims are largely true.

OIP: Does organic farming need application of large quantities of compost?

OPR: A crop does not differentiate whether nutrient elements are offered from fertilisers in a bag or from compost prepared by a farmer. Most scientists believe that large quantities of farm-yard manure (FYM) or compost are required for growing crops, if bagged fertilisers are not used. This belief is due to the fact that the value of FYM or compost is measured in terms of nutrients such as nitrogen or phosphorus that a crop needs. This perspective ignores the fact that there are different types of agriculturally beneficial microorganisms in compost and they have the ability to mobilise crop nutrients and even help in crop protection. To harness the value of these microorganisms, one needs to understand their food and other needs while they function on root rhizosphere of a given crop. Plant biomass, raw or processed (FYM) is a good food for microorganisms. Thus an OF practitioner does not need tens of cattle to make compost for each ha.

Dr. Rupela demonstrating technique to visiting farmers

Indeed, plant biomass can be strategically produced in large quantities on a given field. Quantity of biomass can be substantially more in well endowed rainfall and irrigated areas. The plant biomass serves as food for microorganisms, and small quantities of compost, cow-dung (applied strategically) or its ferments can serve as source of beneficial microorganisms that hasten degradation of the added biomass, when applied as surface mulch. Thus the biomass and microorganisms together can meet nutrient needs of crops grown on the same field, obviating the need for large quantities of compost for organic farming. Recycling of all locally available natural resources (plant biomass in particular) is extremely important, and most OF practitioners I have visited observed such practices.

In a preliminary study at ICRISAT, one such ferment (locally called 'Amrut-Pani') was noted to have high bacterial population of cellulose degraders, nitrogen fixers, P-solubilizers, plant growth promoters and antagonists of disease-causing fungi. As per this study, about 1000 to a million per ml or per g of each of the five different groups of beneficial microorganisms were noted in cow dung and in the ferment – *amrut pani* prepared using cow dung. It was calculated that to harness value of these microorganisms one cattle (with dung yield of about 8 kg per day) would be enough to meet the microbial needs of one ha. Going by this, it is not mandatory to have a large population of cattle for science-based organic farming.

Also, microbiologists can culture <10% diversity in a given niche due to technical limitations, implying that there may be many more and much diverse beneficial microorganisms functioning in a given field.

OIP: How are 'fertiliser' needs met in organic farming?

OPR: It may sound logical that fields not receiving fertilisers (urea, diammonium phosphate or DAP and single super phosphate or SSP) should have lower fertility than those receiving alternative inputs (FYM, biomass etc.), but that is not true. It is an established fact that fields receiving organic inputs generally have healthy soils rich in microbial life. Since use of most fertilisers adversely affects the functions of the agriculturally beneficial microorganisms, its application beyond a level is more often counter productive.

Most soils have all the 30 plus elements needed for crop production present in a bound form. Theoretical estimates suggest the accumulated P in soil is sufficient to sustain crop yields worldwide for about 100 years. However, they are useless unless converted to soluble form or 'available form.'

In OF, plants have to convert the unavailable bound forms to available form and that happens due to organic acids and some enzymes produced by beneficial microorganisms. These microorganisms are abundantly available on the surface of plant roots or in products such as in 'cow dung ferments.'

Bagged fertilisers used in CA have a given element in soluble form. But largely fertilisers of only three elements NPK are widely available while a plant needs 30+ elements for a balanced growth. Excessive and inappropriate use of the fertilizers can cause imbalance in availability of the various other elements needed for plant growth, besides potentially suppressing functions of beneficial microorganisms.

These 30 odd elements found in plant tissues and therefore needed for their growth are taken-up largely by roots of the plants during its growth. Four of them, which incidentally are all gaseous by nature (nitrogen, carbon, hydrogen and oxygen), constitute about 90% of the body weight of a plant.

As would be apparent, most soils are likely to have all these elements in large quantities in non-soluble or total form. The job of solubilising these elements is largely done by microorganisms in nature, if they are provided nutrition in the form of plant biomass and an enabling environment (moisture and temperature).

Also, when trees and annual crops are in the same field, trees can access such nutrients from below one meter soil depth, not explored by crop plants, and added on soil surface through fallen leaves and loppings of branches of trees as mulch. Addition of about eight tonnes biomass per ha has been possible to a rainfed (mean around 750 mm per annum) vertisol when grown strategically through crop selection.

OIP: What about pest control, can one do away completely with the practice of spraying crops with poisonous synthetic pesticides?

OPR: Tropical countries are rich in hundreds of plants (botanicals) with an ability to help manage crop pests (both diseases and insect-pests). Also, microorganisms with the ability to kill/ suppress crop pests occur in nature and some (e.g. Bacillus thuringiensis) are also available commercially. In addition, each insect-pest has some natural predators. As per a report from ICRISAT, the most difficult insect-pest – *Helicoverpa armigera*, also called legume pod-borer or cotton bollworm – has about 300 natural enemies, including beneficial insects. Synthetic pesticides used in CA would kill all beneficial insects that occur in a field while the options used in OF either do not affect them adversely or affect them in a relatively small way.

It is thus possible to eliminate the use of synthetic pesticides for crop protection. But mainstream system continues to promote use of synthetic pesticides. A government concerned about the health and environmental costs of pesticide residues in the food chain, pollution of sub soil water and wellbeing of small-holder farmers, has to make enabling policies to promote the use of the alternative options.

OIP: If one were to sum it all up, given your long years as a scientist and now in your present position with FAO, is there a workable strategy that you can propose to address concerns of food security and environmental sustainability?

OPR: Overall, what we need is a high-yielding, income generating, science-based, farmer-empowering and eco-friendly agriculture system that provides nutritional and food security first to small-holder farmers and eventually to the nation. Agriculture based on organic principles has all these features.

No agricultural research institute can reject organic farming of the type stated above without evaluating/examining in a farming system approach. This will be against the spirit of science.

I am in favor of developing agro-technologies that are low-cost, use/recycle locally available natural resources like land, water, plant biomass etc. in order to empower small-holder farmers to withdraw completely from dependence on purchased external inputs and move towards making farming a sustainable work option for about 80% farmers in today's India.

The Basic Principles of Natueco Farming

At Gunsam, on 26.10.2002, Dr. Atish Dabholkar raised a point regarding basic principals of Natueco farming. Although there are no such principles laid down anywhere, generally the following universal principles were listed as guidelines for all such work.

1. *Harvesting the sun*

In all biological processes, energy input is required and solar energy is the only source available. No time and no square foot of sun energy should be lost by not harvesting it biologically. Lost sun energy is lost forever.

Photosynthesis is the main process by which solar energy is absorbed. Our objective is therefore to obtain higher degree of photosynthesis. Although genetically photosynthesis efficiency is around 1 .1/2 percentage to 2.1/2%, we can increase leaf index [area of leaf for every square meter of land], by use of multiple canopy, utilizing direct and filtered sunrays, etc.

2. *The five stages in a plant's life*

Every plant goes through five stages in its life: a) childhood b) puberty c) youth d) maturity and e) old age. These stages are of roughly equal duration and external intervention at proper stage only is most effective.

For example, there is no use giving fertilizer dose when the plant has become old and is dying.

Generally, plants can be classified as seasonal short duration life span (90 to 130 days), medium life span of 4–5 years and perennials or long life span. For short duration life span, all 5 stages become very critical. For example, if sumptuous roots are not developed in the first 15 to 20 days (20%.of lifespan) no amount of external inputs, thereafter will be useful/effective.

Leaves and branches also show these stages in their life cycles. Yellow old leaves can only fall, they cannot be rejuvenated. In addition, old branches become deadwood eventually.

3. *Medium for root zone*

Generally, this is soil. However, one can do without it as in the case of hydroponics.

The main purpose of the medium is

a) To give support to the plant and anchoring it by means of shoot root and feeder roots.

b) To supply nutrients to the feeder roots.

c) To provide moisture to the plant roots.

d) To provide good air circulation to the roots.

It is always possible to prepare an ideal soil by human intervention. The soil also supports a whole range of microorganisms up to earthworms. The presence of this microorganism is so very beneficial to the plant roots in that they convert minerals found in nature into root absorbable forms.

4. *Plants manufacture their own food*

Unlike animals, plants manufacture their own food. By means of photosynthesis, water and carbondioxide, plants produce sugar – glucose, which are then converted to other forms of sugar, lignin, fats etc. Plants produce 3–4 gms of dry mass/ square foot of photosynthesis area / per one sun-day of 8–10 hrs / day.

From this, a) 1 gm is used in plant metabolism; b) 1gm is used to build plant body, roots, stem, leaves etc; c) 1 gm is either stored or is used for producing fruits.

It is very useful and instructive to know especially about the timings and places of storage of food/ energy and how to tap them at appropriate time. Without the knowledge of this the enzymes and hormones [gyberlic acid, indol acetic acid] one may end up in having plants with luxurious growth but sparse fruiting.

5. *Plant biochemistry*

As mentioned above hormones are the messenger and enzymes the catalysts for plant metabolism, and their study is very useful for general understanding of plant physiology.

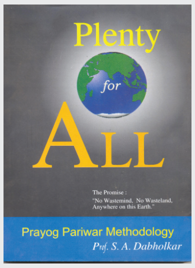
6. A tree is like a colony of independant branches, which have their own life cycle.

7. It is possible to create a microclimate for 10 guntha.

C.M.Pandit
12.11.2002

Book Review

Plenty For All



By Prof. S.A. Dabholkar

Pp. 272 (2001)
Rs. 400
Available from OIB

This is an extraordinary book that in a very lively fashion introduces and explains Dabholkar's revolutionary work among the farmers of especially Maharashtra. It encapsulates what he came to call the Prayog Pariwar Methodology. Prof. Dabholkar came to be disgusted with the limitations of the conventional academic system in which he was a teacher for 25 years. He left his job to demystify science through the farming community. He encouraged farmers to create knowledge themselves and to generate their own experiments. He worked very hard to prove that an ordinary family could meet all its food requirements from 1000 sq mt of sunlight, 500 litres of waste water and the latest scientific know how taken to the last individual through demystification and deprofessionalisation. The Prayog Pariwar (experimenting cells) became a large network among self experimenting farmers. Dabholkar first started his mission in the village of Tasgaon in the Sangli district of Maharashtra among grape cultivators. He was able to raise the productivity of grape farming to international standards and made it a successful activity so that even small farmers could adopt it. His method of farming – which he called 'Natueco farming' – today enables farmers to grow crops in any location without the use of chemicals or pesticides.

One of the most serious exponents of Natueco farming is Deepak Suchdev who has now moved to Madhya Pradesh where he has continued to further refine Dabholkar's idea.

Why Homa Farming?

By Vasant Paranjpe

Homa Therapy is a totally revealed science. It is as old as creation. In the course of time this knowledge was lost but it is now being resuscitated to give people guidance about how to correct the polluted conditions of the planet we find ourselves in today. Homa Therapy comes from the Vedas, the ancientmost body of knowledge known to man.

When things go wrong due to pollution, the elements of nature begin to change. The cohesion of atoms, fusion of atoms begins in a different way as it is described in Atharva Veda. It is stated that if atoms begin refusion and fission in an improper way, a civilization could be destroyed. If Homa is performed when this takes place it helps mold things harmoniously and a new, beneficial element is produced. Notice, we do not say created. Nothing is created, only reshaped. This knowledge is Homa Therapy.

Agnihotra is the basic Homa for all Homa fire practices given in the ancient Vedic science. Agnihotra is tuned to the biorhythm of sunrise and sunset. The process involves preparing a small fire in a copper pyramid of fixed size and putting some grains of rice into fire exactly at sunrise and sunset accompanied by chant of two simple Mantras.

This knowledge can be used in several areas. The following list is illustrative and not exhaustive: Agriculture, environment, medicine, psychotherapy, biogenetics, etc.

* * *

The earth's atmosphere is fed by Homa fire. When Agnihotra copper pyramid fire is practiced, tremendous amounts of nutrients and fragrance are injected into the atmosphere. This is what will make our planet whole again.

Plant structure and physiology

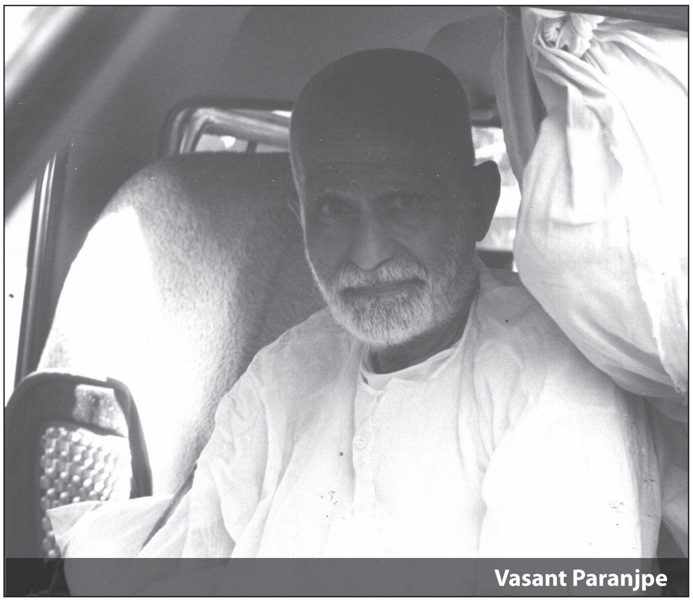
Plants grown in Homa atmosphere evolve networks of veins that are cylindrical and larger than normal, permitting water and nutrients easier movement to all parts of the plant. This helps growth and reproduction cycles. Also, it helps in the production of chlorophyll and plant breathing, thereby helping the oxygen recycling system of nature.

If slides are prepared they will show the difference in cellular structure in plants bred in Homa atmosphere as compared to those which are not.

Subtle energies begin to have more obvious effect on plants now. It can be easily recorded if some scientist want to put their minds to it.

A change in the nuclear structure in plants due to pollution makes it impossible for humans to extract nutrition to survive unless plants are grown in Agnihotra atmosphere with Agnihotra ash. Then the plant defies changes and maintains its place in the balance of nature.

The pathological, nutritive structure of plants is changing. By practice of Agnihotra much of the nutrition, taste and above all a new highly beneficial ingredient is packed into a small area, giving satisfaction (in the sense of quality and quantity) and health. The taste, texture, color, size of kernel which is the seed becomes excellent.


Vasant Paranjpe

The root system in plants changes due to Homa atmosphere. Roots stay small and less troublesome due to the quality of nutrients the plants extracts from the soil.

A new phenomena is noted in Homa Therapy Farming with respect to soybean crops. It will be beneficial to farmers and gardeners to set aside part of their planting area for soybeans where possible. When using Homa Farming techniques a strange situation occurs with respect to the pathological structure of the legume. A chemical reaction occurs whereby antibodies are introduced into the body by the ingestion of soybeans. This will help combat several diseases, some of which medical people are aware of and some of which are yet to occur. This will only occur where Homa Therapy is used and it is given by Grace.

Plant functions

When Homa is done in the garden or under a tree the effect of the smoke first goes to the leaves. The smoke acts as a catalyst for the generation of chlorophyll in terms of a chemical reaction.

Homa atmosphere , especially that of this concise Agnihotra, acts as a catalyst on plant metabolism, causing the plant to reach for the nutrients it needs, necessitating strength and then yielding the nutrients, giving the plant health and allowing it to more efficiently blend with the ecological balance of things.

The root system of a plant is like Nadi*. It draws its energy form a source and, if it has developed properly, it distributes the energy and nutrients throughout the plant, permitting harmonious and equivalent growth. When Homa is performed properly it helps carry the nutrients equally throughout the plant by its vascular system. It does the same thing to humans, on the subtle level.

(Note: *Nadi system mentioned in ancient texts may be described as something like the nervous system but is more subtle, and can be found only in the subtle body of humans.)

Crop yield

When growing plants in Agnihotra atmosphere do not necessarily expect the plants themselves to become large; instead observe the size, quality and appearance of the vegetable, fruit or flower. All the energy of the plant goes towards yield because by performance of Homa we make the plants happy.

Energy patterns of plants are arranged in such a way that when Homa is performed the injection of nutritional content into the atmosphere helps shape and mould these patterns harmoniously so that the result is fantastic yield and excellent quality. Agnihotra is the basic Homa.

A strange phenomenon occurs when plants are bred in Agnihotra atmosphere. An aura-type field of energy is generated from the plant and exists around the plant while Agnihotra is performed in its proximity. The field contains nutrients and vibrations of love. The plant is continually able to draw on this resource that is given by performance of Agnihotra in the area. This gives the plant the ability to maintain maximum growth and yield levels. At the same time a feedback of love is given to the area, helping to negate the effects of thought pollution.

Fruit trees will yield double the usual size and with twice the flesh if Agnihotra and Homa are performed regularly in the orchards. Orange would be a good fruit to begin with as it will quickly, almost immediately, give results.Pear trees will bear sweeter fruit in Homa atmosphere.

Soil

Soil in Homa atmosphere holds moisture better than any other soil. It is due to the ghee and the feedback of the Homa on the atmosphere. When the nutritional rain comes, the nutrients and moisture are sustained as a unit in the soil. This makes for better quality vegetation. It seems fantastic but it is true.

In Homa Therapy Farming the result of the Homa process is that something physical interacts with the soil making the nutrients already there more potent. When nutrients are absent, cultivating the growth of nutrients necessary for healthy plant life is achieved by the Homa process.

In Agnihotra atmosphere the metabolic process of plants is sped up. It is the ghee used in Agnihotra process that is the catalytic factor and on a more subtle level the mantras interacting with the combined effect of the burnt ghee and rice. This combination enters the soil after returning from the solar range. It enters the plants by, one might say, attaching itself to minerals and water absorbed by the root system of the plant. The ghee acts like a catalyst creating a chemical reaction with the plant aiding in enzyme and vitamin production and encouraging and increasing the cyclic rate. In other words the plants mature faster, taste better and are better just by mere performance of Agnihotra in the garden.

Aeration of soil, of course, is an important part of gardening or farming. If Homa ash is placed on top of soil before it is tilled or cultivated it does a lot to help nourish the plant and make the plant happy. It is important to make the plant happy as that is the way the plants can start to give us the feedback effect of love. The more love you put into the farm or garden, the more Homa is performed, specifically revolving around Agnihotra, the greater the vibrations of love will be in the area and the happier the people will be. Also the greater and tastier will the yield be.

Agnihotra and Agnihotra ash, when put on the soil, help stabilize the amount of nitrogen and potassium present.

Trace elements in the soil are changing drastically. Trace elements are important to plant growth and maturation. Homa Therapy farming is the way out. With Homa Farming it begins to become important that all phases of nature work in harmony.

The entire ecological system is benefited by Homa. For example, earthworms are able to generate more moisture in the soil due to performance of Homa. The Homa makes them happy and their hormone secretions increase, thereby benefiting the soil and therefore the plants that live in the soil. The earthworm is important to farming. Homa atmosphere increases the hormones in earthworms involved in their reproductive organs and helps multiplication of the species which in turn helps the soil to become more rich.

Reproduction

Some fruits begin to increase their reproductive cycle if Agnihotra is performed in proximity to where they are grown. A plant's strength depends upon the nutrition of the soil and atmosphere that surrounds it. Science perhaps does not lay so much stress on atmosphere but it is one of the biggest factors due to the oxygen recycling system. Also if the atmosphere is filled with nutrients the plant becomes especially happy when this is done by Homa process. This helps increase the number of seeds, the number of fertile or potentially fertile seeds germinated. Also the period of germination is helped and the quality of pollen produced is improved. The whole reproductive cycle of the plant is benefited by Homa atmosphere.

Vasant Paranjpe

(*Vasant Paranjpe died early 2009*)

Agnihotra

AGNIHOTRA
FOR
EQUILIBRIUM OF NATURE
AND
ENHANCEMENT OF HUMAN LIFE
MANOHAR MADHAVJI POTDAR

By Manohar Madhavji Potdar

Pp. 26 (1999)
Rs. 12

Agnihotra: 'How To' Booklet

This little booklet provides the basics of Agnihotra including the various techniques and equipments required. It also provides interesting details about people who have worked on more précise studies on the impact of agnihotra on the environment.

Organic farmers claim that the performance of the agnihotra does have a positive effect on plants within their farms provided the ritual is performed exactly at the specific time that it must be performed.

More important, they affirm that the agnihotra ritual provides ash which can be used to great benefit for improvement of soils in addition to its impact on the air as well.

Biodynamic Farming

By Peter Proctor

One of the underlying principles of biodynamic farming is the developing of lifegiving humus out of dead organic material. This biologically active humus is the basis of all living soil.

Can you recognise a healthy soil? Can you tell if your plants are healthy? Farmers, sometimes unwittingly, have taken on the responsibility to heal the earth and produce food that heals human beings. But a farmer who walks thoughtfully over the land and harvests crops with reverence produces a different product from one who drives a combine harvester all day with the radio playing.

Biodynamic agriculture is a method of farming that aims to treat the farm as a living system which interacts with the environment, to build healthy, living soil and to produce food that nourishes and vitalises and helps to develop mankind. The underlying principle of biodynamics is making life-giving compost out of dead material. The methods are derived from the teachings of Rudolf Steiner and subsequent practitioners.

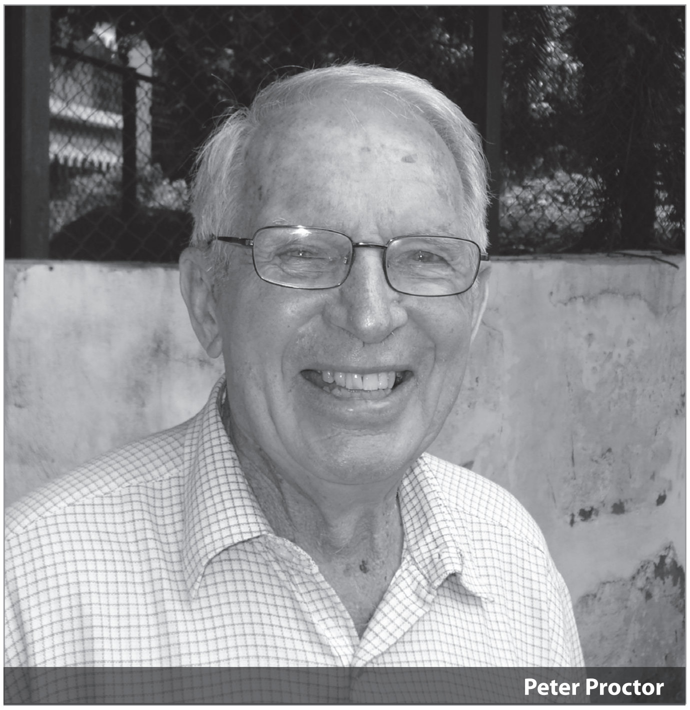
Steiner built up his knowledge from keen observation of plant and animal forms and traditional peasant practice, scientific study and deep spiritual research. He gave his teaching on agriculture in the Agriculture Lectures in 1924, towards the end of his life. By this time he had developed a high level of spiritual awareness. His gift to the world is knowledge from the spiritual world that enables people to recreate and work with natural forces in the fields of education, medicine, religion, art and agriculture. Steiner taught that 'Matter is never without Spirit, and Spirit never without Matter.'

History of the movement

To understand biodynamic agriculture and its relevance for modern agriculture, it is a good idea to look at the background circumstances of Steiner's Agriculture Lectures, which he gave to a small group of farmers on a farm estate in Koberwitz, East Germany (now in the west of Poland, near the border with Austria).

In those days the conventional way of farming was what we would now call organic. Farmers did not use artificial fertilisers. They put all the dung from their overwintering barns back on the field, and along with growing soil-sustaining green crops and the sound use of crop rotation, they maintained a high soil fertility. However, even with good soil and animal husbandry, farmers found their crops were not doing as well as they should; seeds were not as viable, there was an increase in animal ill-health and food did not taste as good. Something needed to be done.

Farmers who knew of Rudolf Steiner's philosophy of spiritual science asked him if he could address these problems. Steiner pointed out that plants grew not only through the fertility of the soil, but also with support from the cosmos – the rhythms of the sun, moon, planets and the wider constellations of the zodiac. This cosmic support, he said, streams into the earth through the living nature of the soil and is important for the healthy growth and quality of the plants.


Peter Proctor

According to Steiner, as the earth becomes older the soil naturally becomes weaker and is less able to receive these cosmic rhythms than in previous times. He felt that a renewal in agriculture was necessary in order to find a way to reenliven the earth so the cosmic energies could again stream strongly into the soil. He introduced the practice of making preparations based on cow manure, silica, and various herbal plants, to be used in order to open up the soil to these influences again. He also made plain the intimate connection between all living things and the cosmos, and the importance of learning the workings of the planets and the heavenly bodies.

Significance for the present

Modern agriculture has tried to come to terms with this ageing of the earth with a chemical approach. To maintain the levels of crop production needed, and to control the accompanying diseases, farmers use massive applications of a whole arsenal of sophisticated chemicals. But this, as we can already see, is leading to an environmental disaster with the poisoning of the soil, water and air.

At the same time, a huge amount of money is being spent on research into the use of chemicals and into genetically engineered plants and animals to solve problems that are in large part man-made. But some modern agricultural scientists appear to be unaware of the importance of the living quality of the soil for healthy growth.

Steiner advocated discontinuing the use of chemical fertilisers altogether. Because of their inherent lack of life, he felt, chemicals could not maintain life or increase fertility in the soil.

The answer to problems of human and animal health and degradation of our environment lies in maintaining a truly fertile soil, by practices such as crop rotations, incorporating plenty of organic matter and the biodynamic preparations.

Farmers carry an enormous responsibility, not only in caring for the land but also in growing food which will be eaten by human beings, and which will give them life and vitality. The quality of the food we grow and eat is directly dependent on the cosmic energy that can come into a living soil, and this is what supports our daily life. According to Steiner, the life forces in our food influence the quality of our thinking and our interaction with other people.

Conscious thinking about and working with these cosmic formative forces, and applying this knowledge in making and using the biodynamic preparations, is what distinguishes biodynamic farming from organic farming and permaculture.

Biodynamic farmers and gardeners treat the farm as an individual with regards to its ecological environment. They work to increase the cosmic formative forces that enhance plant and animal health and growth. It is important that they develop their powers of observation, since biodynamic management relies on working with the natural life processes in soil, plants and animals. Each farm or garden has its own unique micro-environment, and the farmer or gardener cannot rely on following a prescribed management plan such as the spray calendars used in conventional farming.

Biodynamic Farming and Gardening encourages readers to observe and think about the forms and patterns in nature. For example, the spiral or vortex is fundamental to plant life. Biodynamic practice uses this same movement in stirring the biodynamic preparations. Biodynamic farmers can apply the knowledge gained from such observations to solving practical problems such as weed and pest management.

Biodynamic Farming and Gardening provides information on how to make and apply the biodynamic preparations; the times in the planetary calendar for carrying out various tasks; weed and pest management; and converting farms, orchards and gardens to biodynamic management.

The biodynamic preparations referred to in the book, which are essential ingredients of biodynamic farm management, can often be purchased from biodynamic associations (listed in appendix 10). These associations can also provide advice about the Demeter standards required for certification as a biodynamic farm.

Biodynamic farmers try to work with the rhythms of the sun, moon, planets and constellations.

The potential importance of biodynamic farming is being realised in countries such as India, where groups of dedicated practitioners are learning how to adapt the same principles to their particular conditions.

Biodynamic farming is a new direction in agriculture that will benefit our planet in the future. It is hoped all growers the world over will be inspired to take up the challenge.

* * *

Biodynamic agriculture is a system of organic agriculture that has proved to be very effective throughout the world. The results are better soils, quality food, healthy plants, healthy and contented animals, and enthusiastic farmers and consumers.

It's not as if it's a fly-by-night idea that has no basis for reality. It's happening and has been for eighty years!

The world is slowly becoming aware of the problems of pollution facing humanity, particularly in the agricultural field. Entrepreneurs see a market for selling food that has been grown with fewer pollutants, but still with the downstream adverse effects on the environment. There is a growing movement of farmers who are genuinely trying to grow organically; but often they are only replacing the chemical inputs of the conventional grower with organic inputs. It is still the same basic understanding of growing: input = output.

In contrast, biodynamic techniques enhance, rejuvenate, add to and maintain soil quality. Cowhorns and cow dung, after being buried together in the earth, make the most wonderful humus to spread on the land. This improves the structure of the soil dramatically and quickly. Good soil structure means better water-holding capacity, which means better control, with consequently less loss of topsoil, which means better and deeper roots and less need for irrigation, which means deeper soil and more natural fertility.

We know that the earth is tired and overstressed. People have been taking and taking for years and not putting anything back. Now, through biodynamic farming, we have the chance to change this.

So what's the problem?

1. Cowhorns – people don't understand what these have to do with growing crops.

2. Because this concept is different from what is considered the norm, people think it must therefore be wrong.

3. People ask, 'How can such a small amount have such an effect? Have you had it scientifically tested?'

Earth fertility and food quality

The farmers of India have no problem in understanding the majesty of the cow in relationship to the continuance of fertility of the earth. They realise the cow is a gift from heaven.

Indian agriculture has a history of 4000 years. Indian farmers recognise the connection of the divine in the growing of food, and have done for years. We in the West prefer to turn our back on help from on high. We think we can do it all ourselves, and that we are the masters of creation.

People of Western cultures are generally interested in quantity of production rather than quality. This is a greedy attitude, but one admired and applauded by the lords of economic performance. When applied to the growing of food, this attitude is justified by the need to feed a hungry world. Unfortunately, it is beginning to rub off on Asian people as well.

It can be done

It is possible to grow sufficient food for the world without poisoning our planet. We do not need to use a whole array of chemicals and synthetic materials. The use of hybridised or genetically engineered seeds is totally unnatural and unnecessary.

Biodynamic technology, with its informed use of the various preparations, will maintain soil fertility for years to come in a wholly natural way. It will support the growing of a plentiful supply of nourishing food. In India it has been shown that soya beans grown using biodynamic methods produce 30 per cent more crop than those that are chemically grown.

At some point in considering our existence in this world, most people come to a recognition that there is a higher power than ourselves that is responsible for creation; that there is a force of growth, albeit a beneficent one. Nature provides us with examples of this life force every day, in the mighty trees of the forest, in scented roses, a medicinal herb, a nourishing carrot or a blade of grass.

This is where we must grasp the nettle in our attempt to understand biodynamic agriculture and to make the connection between this force of growth and the use of the biodynamic preparations.

The preparations are made from all-natural products – cow dung, quartz, and medicinal herbs – and are processed in conjunction with various animal parts. These preparations, when applied to the soil through ground sprays, composts and liquid manures, enliven the soil. They make happen all the biological soil processes that soil scientists talk about but rarely see in the field.

Another thing that biodynamic farmers take into consideration is that the heavenly bodies and the fixed stars in their constellations play a very important role in the continuance of life on our planet. This is the basis of biodynamic agriculture.

Steiner gave the world ideas on a renewal of agriculture. He pointed out that we must nourish the earth in such a way that the cosmic influences could continue to flow in. During his lectures, the idea for the use of the biodynamic preparations was born.

Using the biodynamic preparations regularly opens the soil and the land to the effects of cosmic activities and allows these to work through the soil into the plants. The more biologically active the earth, the more the beneficent forces can work through into plant and animal.

Human beings, consumers of these plants and animal products, gain in forces to develop the right thinking, a healthy life of feeling, and a strong will to do so, when eating the food that is grown in this enlivened environment.

These concepts are beautifully simple, logical and easy to understand if people have the right mindset. There are no hidden agendas here. Recognition of this renewal of agriculture has to come about.

It's all about our drinking water – its purity and its quality.

It's about quality food.

It's about the social life on farms all over the world.

It's about an affordable, sustainable system of agriculture that will allow all farmers to stay on their land for many years.

It's about farming being the most important activity in the world.

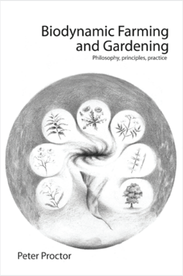
It makes organic agriculture work!

In my opinion it will only be biodynamic agriculture and all that emanates from it, that can give the world the spiritual hope and confidence for the future that we are all looking for.

Think about it.

The Classic Text on Biodynamic Agriculture

Biodynamic Farming and Gardening

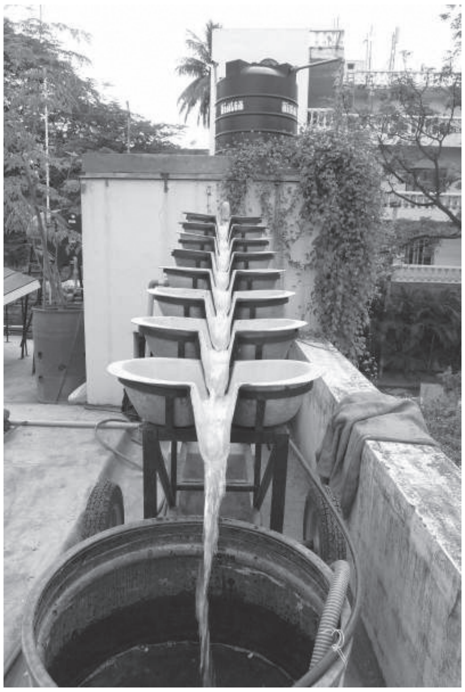


By Peter Proctor

Pp. 212 (2008)
Rs. 250
Available from OIB

Peter Proctor has written a complete book on biodynamic farming (from which the above essays have been extracted). In the book, Proctor provides practical observations and biodynamic techniques, tips on how to recognize healthy soil and how to make biodynamic preparations.

This new Indian edition includes ideas on applying the biodynamic preparations. It includes appendices on understanding the planting calendar and the influence on the planet and it carries an updated report on recent advances in biodynamic practices and techniques practised in New Zealand, Australia and India.



A jaerna flowform associated with biodynamic farming. This one is being used by Chalasni Dutt on his rooftop organic garden in the city of Vijaywada, AP.

Peter Proctor now spends his time between Mysore in India and New Zealand and he has written this book for the entire community of biodynamic farmers in India and also for gardeners so that they can minutely observe the processes of life and growth and can understand how these processes are governed by cosmic forces. They can then use his knowledge when applying their practical skills.

In sum, the single volume alone will tell you all that you need to know on biodynamic farming and gardening, its philosophy, principles and tried and tested practices.

Since Proctor is an eminently practical person, the various techniques laid out in the book are all tested out by him earlier on farms in India or New Zealand.

Effective Microorganisms and Farming

By Terua Higa

A new technology is bringing about a major revolution in a number of seemingly diverse areas. Effective Microorganisms (EM) technology is effecting significant and on-going changes in agriculture, in the environment and on the medical front. My hope in writing this prologue is that it will provide a brief introduction to EM technology: what it is, how it is effecting changes for the better in our world, and the promise of hope it holds for our very sick and seriously ailing planet.

An appropriate place to start would seem to be with the two dynamic and opposing forces existing within nature. These may be described in the broadest terms by the characteristic way in which they affect the world around them as the forces of regeneration and degeneration. The former, the force of regeneration, characteristically endows all things with life and vitality, and supports and maintains wholeness, soundness and good health. It is productive, beneficial and vital. In other words, it is the life force. In opposition to this, degeneration is the dynamic of destruction: it engenders breakdown, instigates and advances decay and decomposition, pollution and contamination, causing sickness and disease, and, ultimately, death. It is counter productive, pathogenic and necrotic. Recent research is only just now coming to understand what lies behind both these forces, and what it is that instigates, governs and drives them. Both of them are generated and totally under the domination of some of the tiniest life forms we know, organisms so minute they are invisible to the naked eye. The control of regeneration and degeneration lies in the grasp of the miniscule creatures known collectively as microorganisms.

Soil conditions are an accurate indicator of which of the two forces is in control. For instance, plants in soil where anabiotic or regenerative types of microorganisms predominate exhibit a remarkable rate of growth, and are amazingly healthy and disease and pest-free. Without the need for agricultural chemicals, pesticides and artificial fertilizers, the quality of the soil exhibits a steady and on-going improvement. The opposite is true in soil where a preponderance of degenerative or pathogenic microorganisms hold sway. Here plant growth tends to be poor, producing only weak, sickly plants afflicted with severe pest infestation, where growth of any kind is virtually impossible without the support of agricultural chemicals and artificial fertilizers. At the present time, this is the depleted, degraded condition which unfortunately accurately describes over 90% of the soil in Japan. Most of Japan's soil is in the final stages of extreme degradation, and is advancing rapidly toward complete breakdown and degeneration.

Yet even in the face of such extreme conditions and the problems resulting from them, there is a force able to turn things completely around and to move even soil as poor as this rapidly toward regeneration within an extremely short space of time. The force capable of this is generated by the tiny anabiotic microorganisms known as EM.

An acronym for 'effective microorganisms,' EM is the collective term I coined for the large group of microorganisms responsible for the regenerative process within the two dynamic forces of nature I have just described. Photosynthetic bacteria, yeasts, lactic acid bacteria and fungi are just some of the strains of anabiotic microorganisms belonging to the EM group. When a combination of them is present in the soil and they are proliferating in sufficient numbers, they bring about an increase in antioxidation levels and a resultant intensification in energy concentrations. In other words, their activity instigates the regeneration process, purifying the air and water content of the soil and intensifying plant growth.

Prof. Terua Higa, inventor of EM formula

A further positive feature of anabiotic microorganisms is that their secretions contain large amounts of nutrients beneficial to both plants and animals including amino acids, organic acids, polysaccharides and vitamins. This is why the application of EM technology in agriculture not only does away with the need for agricultural chemicals and artificial fertilizers, but achieves better results in every way than when they are used.

Results achieved with effective microorganisms (EM) in the field of agriculture in terms of both increased volume and improved quality are really remarkable. Let me offer some actual examples of pertinent and verifiable data taken from results achieved for rice cultivation in Japan.

At the present time, average yields for rice grown using conventional methods are currently running at nine bales (540 kilograms = 1200 1bs approx.) per 10 ares (1000m2). Such results assume optimum industry and application on the part of the farmer as well as favorable weather conditions and the use of agricultural chemicals and artificial fertilizers. Nevertheless, within only a few years of instigating the use of EM, we have seen yields rise to 14-15 bales/10 ares. The largest volume for rice production ever recorded in Japanese history prior to the use of EM was achieved by a farm in the Yamagata region of Japan and was 14.5 bales/10 ares. Now, within just a few short years since its instigation, EM has proved that it is possible to increase yields, and put them on a par with the very best ever achieved using conventional methods of rice production. This in itself represents a really substantial increase in volume output, and yet it is not the whole story: there is more. The maximum yield achieved by our research group under experimental conditions was 27.6 bales/10 ares, a result which suggests that used under actual farming conditions, there should be no difficulty in EM-based rice cultivation from achieving yields of 30 bales/10 ares. If wide scale application of EM were actually put into effect, there is no reason why yields for areas currently given over to rice production should not be tripled almost overnight.

In my opinion the main advantages of EM in the area of farming and food production – in other words why I consider EM-based agriculture as the ideal form of agriculture – are basically due to the fact that it fulfills six important criteria:

(1) It is free of agricultural chemicals, pesticides and artificial fertilizers;

(2) It effectively controls weeds without the use of herbicides;

(3) It does away with the need for tillage and other preparation of the soil prior to cultivation;

(4) It is environmentally safe;

(5) It effectively improves the quality of crops and the produce grown with it;

(6) It guarantees economic stability.

A cursory glance at this list will have brought something to your notice immediately, which is that the claims I'm making here for EM technology coincide precisely with the ideals to which organic farming is targeted. However, conventional methods of organic farming have been found to have one crucial, and as yet insurmountable stumbling block, which is they fail in all respects to improve productivity, and it is this that has caused them to be labeled anachronistic in their approach.

It goes without saying that it is of little significance how excellent the quality of an agricultural crop may be if it cannot be produced in sufficient quantities. While it is possible to produce crops without the use of agricultural chemicals and artificial fertilizers, this can only be achieved at the sacrifice of a number of other conditions which any modern form of agriculture must fulfill if it is to be at all effective.

The point about agricultural methods based on, or incorporating EM technology, is that they make it possible to resolve all these questions. Let me explain in simple layman terms how this can be achieved.

EM completely fulfills the first condition since it totally does away with the use of any kind of agricultural chemical, pesticide or artificial fertilizer. It achieves this not merely passively since no residue of these substances is to be found on the crops, but rather actively since its use actually precludes the use of any substances of this nature at any time during the entire cultivation process. Although it was previously considered impossible to raise crops properly without the assistance of such artificial substances, the numerous extant bona fide examples of healthy crops actually having been grown using EM and no other substance clearly disproves the necessity of using artificial substances.

Farmers whose agricultural baptism, so to speak, was in the use of modern methods are likely to dispute such claims, since they have grown up believing farming without the use of agricultural chemicals and fertilizers to be impossible. However, amazing harvests are being obtained using absolutely none of these substances at all but a fermented mixture of rice bran, rice straw, fish meal and EM concentrate called 'EM Bokashi' spread over the area to be cultivated together with an appropriate amount of liquid EM in place of regular compost. The result: larger harvests of better quality produce which is completely free from harmful chemical residues.

The second achievement of EM, that of effectively controlling weeds without the use of herbicides, is something long considered by farmers to be 'the impossible dream' one that simply could never actually be realized. The work of keeping down, culling or getting rid of weeds has always been such a major time-consuming, labor-intensive and tedious part of farming that this in itself was reason enough for herbicides to be perceived as 'the farmers' salvation' when they first came on the scene.

The main problem with herbicides is simply the way they operate to control weeds, which is killing them by subjecting them to massive doses of oxidation. This process is extremely detrimental to the soil since it simultaneously robs it of the myriad life forms that exist within it. This is exactly like winning the battle but losing the war since so much else besides is sacrificed in this Pyrrhic victory over weeds. Soil leached by over-oxidation will eventually turn into a desert wasteland, and crops grown in it will become puny, diseased and infested with pests as their resistance is drastically weakened. This is completely different from what happens when EM is used to control weeds. As we saw in the case quoted earlier, and as has been verified any number of times in both wet rice cultivation in paddies as well as dry cultivation, EM not only effectively controls weeds throughout the growing season, it is even less time consuming and labor intensive to use than conventional herbicides.

The third major 'plus' of EM is that it does away with the need to till and prepare the soil in other ways prior to cultivation. I would imagine the absolute ideal for all farmers would be a method of agriculture that eradicated entirely the need for tilling and planting, where the land would produce fine crops if simply left to its own natural devices, and where the only effort required would be that of harvesting the resulting produce. While I am sure no one in their wildest dreams would imagine such a form of agriculture could ever be possible, the ultimate aim of EM farming methods is to do away at the very least with the need for the land to be tilled or prepared in some other way before it can be used for planting and cultivation.

One of the resultant benefits of EM technology is that the soil becomes extremely soft and malleable. So much so that in many cases it's possible to set up the standard supports used in horticulture by simply pressing them into the ground by hand where they can easily be pushed down to a depth of from 1.5-2 meters. It's quite possible to use soil of this quality for continuous cropping without the need to till it between harvests.

EM methods of agriculture are environmentally safe. This is the fourth criteria and a natural adjunct to implementation of the previous three: stopping the use of agricultural chemicals artificial fertilizers and all herbicides, as well as enabling the soil to regenerate itself without needing to be tilled.

The fifth condition and proven claims is that the quality of crops and produce grown using EM exhibit significant improvement over those grown without it. The reason being that by bringing about increased levels of antioxidation, EM stimulates the activity of microorganisms in the soil. This has a beneficial effect on plants, which is why crops grown in soil treated with EM are far superior in every way, including nutritional value, to those grown using conventional methods. Superior results of this nature have been achieved for virtually every kind of crop where EM methods of agriculture have been used.

Finally, EM methods guarantee economic stability, a further claim which can be clearly substantiated. In comparative costings carried out for conventional methods using pesticides, agricultural chemicals and artificial fertilizers and those using EM technology, the EM method was shown to be far less costly. In most cases applying EM technology required an investment of only one-half to one-quarter of that required by conventional methods, and in some exceptional cases, of no more than one-sixth. When its advantages in terms of safety and the benefits to farmers' health as well as to the environment in general are also included in the equation, the long-term economic benefits of EM technology in the field of agriculture are on a scale almost too great to be calculated.

Orthodox agricultural techniques are markedly remedial in their approach. In other words, they are strongly oriented toward finding solutions for existing problems, and it is this 'remedial approach' of treating the symptoms instead of locating and correcting the root causes which has caused agriculture to place such heavy reliance on agricultural chemicals and artificial fertilizers. But what this basically misguided remedial approach totally overlooks is the inherent capacity of the soil to heal itself.

A single gram of rich and fertile soil is the habitat of several hundred different strains of microorganism. In total these number several billion microorganisms, all of them carrying on a wide range of diverse activities. It is these activities which are the very source of plant growth. If we take advantage of this natural state of affairs and work to improve the activities of the effective microorganisms which dominate and control the overall activities of the rest, we will be able to optimize the ability of plants to convert sunlight, water and air into the energy they require for growth. By doing so we will then be able to achieve remarkable production results. Influencing the microorganisms in the soil to move towards becoming actively regenerative is the main purpose for which EM technology was developed.

Teruo Higa

The Original Book on EM

This outstanding book – from which we have also carried the extract above – is largely a very detailed introduction to effective micro-organisms, a batch of beneficial aerobic and anaerobic bacteria that Higa discovered produce excellent results when combined for work in a wide range of problem areas in the human and natural environment, especially agriculture.

The book is largely Higa's conviction of how EM can transform agriculture. Besides this however the book also describes the ways in which EM can be used for dealing with environmental problems including elimination of odours, recycling of waste water, cleaning up of rivers, etc. This one single book will tell you everything you need to know about EM and why it has become a major source of interest for persons who are looking for an environmentally safe medium of dealing with pathogenic microbes and increase the population of beneficial ones.

* * *

An Earth Saving Revolution

By Teruo Higa

An Earth Saving Revolution
A means to resolve our world's problems through Effective Microorganisms (EM)
Teruo Higa
Translated by Anja Kanal
英語版●地球を救う大変革
Kitchen garbage can be transformed into fertilizer!
Polluted water can be made drinkable!
How microorganisms can lead to agricultural, environmental, and medical miracles.
Sunmark Publishing Inc.
定価●本体1456円+税

One of the greatest, if not the greatest enemy of crop production is the many varieties of harmful or pathogenic insects generally referred to as 'pests,' particularly the harmful pests which spread disease. A common characteristic of these harmful pests is a preference for the oxidized substances known as oxidants. As a result, they are effectively deterred by substances or environments where there are high levels of antioxidants. Another interesting fact is that the eggs laid by harmful pests on plants with a well-developed capacity for antioxidation tend to remain at the egg stage and never hatch.

For example, eggs laid by flies when treated with EM fail to mature into maggots (larvae). Similarly, maggots treated with EM never progress beyond the larval stage, and therefore never mature into flies. The reason is that maggots thrive on certain substances found in contaminated and putrefied matter which enable them to produce the hormones needed for passage through the pupal stage and for maturity into adult flies. The antioxidants present in EM block formation of these special hormones thereby curtailing metamorphosis.

The situation is different when it comes to beneficial insects. For the most part, the group of pathogenic insects, the harmful pests which spread disease tends to be herbivores feeding on weak or sick plant life or rotting matter. By contrast, the majority of beneficial insects are usually carnivorous. The enzyme system in herbivores differs from that of carnivores. This is fortuitous because it means that a pronounced capacity for antioxidation will have a detrimental effect on harmful pests but not on beneficial insects. Not only will it not have a detrimental effect, more specifically, it will have a beneficial effect by bringing about an increase in the energy levels of these creatures.

In India you can order EM from:

P. Karan: 09051498520
email: maplekaran@yahoo.com
Kanti Shah: 09051498600
email: kanti@teraindustries.com

Permaculture

The word ‘permaculture’, a contraction of ‘permanent agriculture’ or ‘permanent culture’ is about designing ecological human habitats and food production systems. A central theme in permaculture is the design of ecological landscapes that produce food. Emphasis is placed on multi-use plants, cultural practices such as sheet mulching and trellising, and the integration of animals to recycle nutrients and graze weeds. Permaculture however entails much more than just food production. It incorporates energy-efficient buildings, waste water treatment, recycling and land stewardship in general - all based on ethics of Earthcare.

Bill Mollison and David Holmgren, both Australians, a guide and student duo, are synonymous with the Permaculture movement that evolved in the 1970s. Their close association over two years produced an incredible garden and the manuscript which became Permaculture One.

Permaculture principles focus on thoughtful designs for small-scale intensive systems which are labour efficient and which use biological resources instead of fossil fuels. Designs stress ecological connections and closed energy and material loops. The core of permaculture is design and the working relationships and connections between all things. Each component in a system performs multiple functions, and each function is supported by many elements. The key to this design is observation and replication of natural ecosystems.

Permaculture can be applied in any ecosystem, no matter how degraded. It values and validates traditional knowledge and experience and incorporates sustainable agriculture practices and land management techniques and strategies from around the world. It advocates the adoption of concepts and philosophies that are both earth-based and people-centered, such as bioregionalism. Many of the appropriate technologies advocated are solar and wind power, composting toilets, solar greenhouses, energy efficient housing and solar food cooking and drying etc. Due to the inherent sustainability of perennial cropping systems, permaculture places a heavy emphasis on tree crops. Systems that integrate annual and perennial crops-such as alley cropping and agroforestry - take advantage of ‘the edge effect,’ increase biological diversity, and offer other characteristics missing in mono- culture systems. Ecological methods of production for any specific crop or farming system (e.g., soil building practices, biological pest control, composting) are central to permaculture.

Farming systems and techniques commonly associated with permaculture include agro- forestry, swales, contour plantings, keyline agriculture (soil and water management), hedgerows and windbreaks, and integrated farming systems such as pond-dike aquaculture, aquaponics, intercropping, and polyculture.

Gardening and recycling methods common to permaculture include edible landscaping, keyhole gardening, companion planting, trellising, sheet mulching, solar greenhouses, spiral herb gardens, swales, and vermicomposting. Water collection, management, and reuse systems like keyline, greywater, rain catchment, constructed wetlands, aquaponics (the integration of hydroponics with recirculating aquaculture), and solar aquatic ponds (also known as Living Machines) play an important role in permaculture designs.

Permaculture is unique among alternative farming systems (e.g., organic, sustainable, eco-agriculture, biodynamic) in that it works with a set of ethics that suggest we think and act responsibly in relation to each other and the earth. The ethics of permaculture provide a sense of place in the larger scheme of things, and serve as a guidepost to right livelihood in concert with the global community and the environment, rather than individualism and indifference.

Permaculture also acknowledges a basic life ethic, which recognizes the intrinsic worth of every living thing. A tree has value in itself, even if it presents no commercial value to humans. That the tree is alive and functioning is worthwhile. It is doing its part in nature: recycling litter, producing oxygen, sequestering carbon dioxide, sheltering animals, building soils, and so on.

The principles of permaculture provide a set of universally applicable guidelines which can be used in designing sustainable habitats. Distilled from multiple disciplines–ecology, energy conservation, landscape design, and environmental science–these principles are inherent in any permaculture design, in any climate, and at any scale. To list a few:

1. Components placed in a system are viewed relatively, not in isolation.

2. Everything is connected to everything else.

3. Every function is supported by many elements.

4. Good design ensures that all important functions can withstand the failure of one or more element.

5. Each element included in a system, is chosen and placed so that it performs as many functions as possible.

6. Keep the focus local. Grow your own food, cooperate with neighbors. Emphasize community efficiency not self-sufficiency.

7. As a general rule, as sustainable systems mature they become increasingly diverse in both space and time. What is important is the complexity of the functional relationships that exist between elements not the number of elements.

8. Use and reserve biological intelligence.

9. One calorie in/one calorie out. Do not consume or export more biomass than carbon fixed by the solar budget.

10. Find the balance of various elements to keep one from overpowering another over time.

11. Incorporate multilevel garden design, i.e., trellising, forest garden, vines, groundcovers, etc.

12. Recognize that certain elements prepare the way for systems to support other elements in the future, i.e. succession planting.

13. Use onsite resources. Determine what resources are available and are entering the system on their own, maximize their use.

14. Ecotones are the most diverse and fertile areas in a system. Two ecosystems come together to form a third which has more diversity than either of the other two, i.e.: edges of ponds, forests, meadows, currents etc.

15. Energy Recycling.

16. Keep things small scale. Intensive systems start small and create a system that is manageable and produces a high yield.

17. Make least change for the greatest effect.

18. Implement planting strategy - 1st-natives, 2nd-proven exotics, 3rd unproven exotics - carefully on small scale with lots of observation.

19. Work within nature. Aiding the natural cycles results in higher yield and less work.

20. Adopt appropriate technology to cooking, lighting, transportation, heating, sewage treatment, water and other utilities.

21. Whatever we take, we must return. Every object must responsibly provide for its replacement.

23. The problem is the solution. We are the problem, we are the solution. Turn constraints into resources, mistakes are tools for learning.

24. The yield of a system is theoretically unlimited. The only limit on the number of uses of a resource possible is the limit of information and imagination.

26. The role of a successful design is to create a self-managed system.

27. Order and harmony produce energy for other uses. Disorder consumes energy to no useful end. Tidiness is maintained disorder. Chaos has form, but is not predictable.

28. In complex systems, disorder is an increasing result. Entropy and life-force are a stable pair that maintain the universe to infinity.

29. For a complex system to remain stable there must be small pockets of disorder.

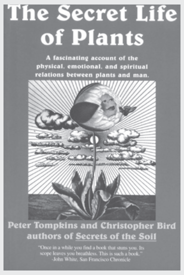
30. Respect entelechy – the principal of genetic intelligence. i.e. a rose has thorns to protect itself.

31. Protracted and thoughtful observation rather than protracted and thoughtless labor. Wait the year out.

32. Hold water and fertility as high (in elevation) on the landscape as possible. It's all downhill from there.

The website, www.permacultureactivist.net is a good resource base for anyone interested in further inquiry. It features, books, articles and also addresses of permaculture associations and individuals form across the globe.

The Secret Life of Plants


The Secret Life of Plants
A fascinating account of the physical, emotional, and spiritual relations between plants and man.
Peter Tompkins and Christopher Bird
authors of Secrets of the Soil

By Peter Tompkins and Christopher Bird
HarperCollins India

Pp. 402 (2000)
Rs. 395
Available from OIB

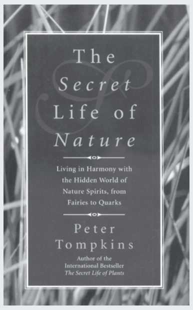
Though this book was originally published in 1973, it is still in great demand as one of the greatest books ever written on the life of plants, a modern day version of Vrkshayurveda. Once you read it and accept the data the authors present, you may never treat plants as uncaringly as you may have done in the past.

Tompkins and Bird describe in detail all those experiments done by human beings (including pioneering work done by Sir Jagdish Chandra Bose) which prove that plants feel pain and demonstrate anxiety just like members of the human species do.

They document how plants are pleased and grow better when placed in comfortable and warm environments; how they react positively to people talking to them; how they react when faced with people with whom they have associated violence in the past; their abilities to communicate with people and other plants miles away.

From what the authors describe (with great restraint), one is not able to figure out whether it is plants or human beings that have a far better hold on life and a far better foothold on planet earth.

The Secret Life of Nature


The Secret Life of Nature
Living in Harmony with the Hidden World of Nature Spirits, from Fairies to Quarks
Peter Tompkins
Author of the International Bestseller The Secret Life of Plants

By Peter Tomkins & Christopher Bird

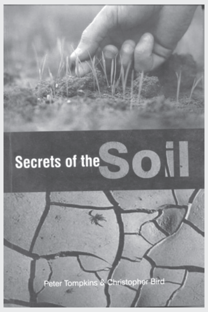
Pp. 228 (2008)
Rs. 195
Available from OIB

Peter Tompkins shows Indians that some of the most remarkable capacities and insights dealing with the natural world have come from Indians. Thus, one of the major heroes of The Secret Life of Plants was Jagdish Chandra Bose. In the present volume, the vision of nature spirits including fairies and quarks first became possible after the visionaries had gained the potencies that come from doing yoga.

One of the finest texts of organic farming is Findhorn. I read that book 30 years ago. It reported on the Findhorn community's ability to do magnificent gardening after a connection had been established with devas. There is a long tradition in Europe that claims that there is an entire universe of spirits and fairies that actually looks after plants and other living creatures on this planet. One can communicate with them as well. Those with special abilities can also see them.

This book explores that possibility. We have put it here because it is part of the Trilogy.

Secrets of the Soil



By Peter Tomkins & Christopher Bird

Pp. 445
Rs. 395
Available from OIB

For those who have read *The Secret Life of Plants*, here is the companion volume by the same authors dealing exclusively with the secrets of maintaining living soils.

The book contains fairly detailed accounts of a number of innovative and non-traditional methods used by farmers and great pioneers to prevent the slow degradation of the planet. The book reports on the techniques of Rudolf Steiner's bio-dynamic agriculture and on several other amazing new techniques all of which can be handled by ordinary farmers to restore the vitality of the soil.

Swidden as a Rational Agricultural System

By Evelyn Hong

In this splendid, scholarly essay, Evelyn Hong provides the most compelling and significant analysis to date of what is known as 'swidden agriculture' or the food production systems of tribal peoples living in the hills and mountain systems of the planet. The farming system is also called 'jhuming' or slash-and-burn agriculture in India.

Hong demonstrates the scientific basis for swidden agriculture. We are running her essay because this is a book about agricultural knowledge. Very often, books about agricultural knowledge are produced by experts and scientists who have scant respect for the knowledge systems of those not educated in the university tradition.

◆

In recent years, swidden farming has been accused of being ecologically destructive, and is blamed for removing the tropical forest. This view is however most misleading, for swidden is in fact very suited to the tropical forest ecology.

Swiddening or shifting cultivation was basically a system of agriculture in which the land cultivated was rotated: land on which rice had been grown for one season (or a few seasons) would be vacated and allowed to lie fallow while the cultivator opened another plot for the next season's planting.

This pattern of farming is carried out until the original piece of land is returned to when its fertility has been restored. This technique by shifting cultivators to safeguard the once cultivated land for future use (including its use by descendants and the return of the land to fallow or the regenerative process) is an integral concept of shifting cultivation. This type of cultivation has also been called 'slash and burn' because the opening up of new land involved chopping down trees or bush cover and firing the fallen vegetation.

Shifting Agriculture: Complex and Ecologically Sound

Shifting cultivation is a complex system of land use and cultivation requiring sophisticated knowledge of the stability of soil types to crops grown, climatic variations and soil fertility. Referring to swidden farmers, Erik Eckholm of the Worldwatch Institute writes that 'few of the men and women who practise it have been educated in primary schools, let alone universities. Yet they usually carry in their heads an extraordinary fund of scientifically sound knowledge about plant species and soil qualities'. According to Spencer, soil studies clearly indicate that shifting cultivation does not in itself ruin soils and produce destructive erosion. In fact many shifting cultivator peoples develop a fine sense of the regional and qualitative variations in the soils they cultivate. According to him: 'Such awareness is indicative of a people who are far advanced technologically from the very beginnings of crop-growing practice.'

Shifting agriculture is a highly suitable and viable form of agriculture in the tropics where soils are poor. Tropical vegetation grows very quickly during fallow and enables the soil to regenerate. Increasingly, studies have shown that swidden agriculture is in many ways 'imitative' of the tropical forest ecosystem and more ecologically conservative than permanent field cultivation (Grandstaff 1980:8). 'Swidden cultivation comes closer to simulating the structure, functional dynamics and equilibrium of the natural ecosystem than any other agricultural systems man has devised'. It is also acknowledged that in many marginal farming areas of the world there is as yet no suitable substitute for swidden farming.

Multiple Cropping

The most outstanding feature in shifting cultivation is the variety of crops grown. These are planted at various times in the swidden cycle and they mature or ripen at different periods, thus providing the farmer and his family with a steady supply of food. This also means that the ground cover is protected and the soil is shielded from water and wind erosion. This practice enables the swiddener to get the most use in one single plot with the minimal effort. Multiple cropping discourages pests and diseases unlike monoculture or single crop cultivation. The diversity of crops grown also helps to keep down the weed growth which is a major problem in swiddening. Most crucial, multiple cropping means that the continuous and varied supply of foods from the swidden gardens will enable the swiddener to fulfill most of his nutritional needs.

Economic Use of Land

Since shifting cultivation involves a rotation of fields, forest regeneration is integral to the system. This recycling of land use is a form of conservation practice which prevents land wastage. A swidden farm comprises several scattered plots. This helps to cut down damage from pest attack if the farm had been concentrated on one site. The dispersal of the sites also enables seeds from the surrounding forest belts to germinate there, hence hastening forest regeneration. The forest belts also serve as windbreaks to reduce evaporation and protect the soil when the land is cleared for farming. It has been argued that although swidden farms in virgin forests can give higher yields, swiddeners in fact prefer secondary forest cultivation. This is because clearing primary forest is an arduous and dangerous task which requires more manpower for a given area. It also demands a longer drying period before the fields can be burnt and thus more time is taken.

Conservation of Soils: Retention of Nutrients

It is an established fact that the long-term success of a shifting cultivation system depends on the maintenance of soil fertility. If the nutrients lost or displaced during the cultivation phase of the cycle are approximately balanced by those replaced during fallow, the system may continue in practice indefinitely. Many researchers have found that shifting cultivators have a profound knowledge of soil types and they make use of this knowledge to grow different crops that will utilise the varying qualities of soil. 'Sometimes what looks like an unplanned garden may be quite precisely planted.' Conklin has pointed out that the Hanunoo have great skill and knowledge of soils. They have their own method of rating the fertility of soil types. This rating was found to correlate with both modern scientific pH ratings (measure of alkalinity or acidity in the soil) and chemical analyses for mineral constituents.

Conservation of Soils: Minimal Soil Erosion

Because the soil is not disturbed to a depth beyond a few centimetres in planting and weeding, erosion is minimal. In Sarawak it has been found that soil erosion is of little importance under traditional shifting cultivation.

It can be seen from the above discussion that under low population density, low technology, poor humid soil and availability of land, swidden agriculture is a highly adaptive form of agriculture. It 'implies the almost complete moulding of human practices to fit the environment as it is,' according to Eckholm. In comparison to other forms of tropical agriculture he further adds: 'The unpleasant truth is that, for many tropical areas of Africa, Latin America, and Southeast Asia, no alternative food production system to shifting cultivation has yet proven both biologically and economically workable.'

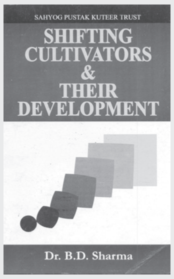
(From: Natives of Sarawak*, pp.19-28).*

Natives of Sarawak – Survival in Borneo's Vanishing Forests
By Evelyn Hong

Shifting Cultivators

This is an amazing book on *jhum* cultivation in India towards the end of the 20th century. B.D. Sharma was former Commissioner of Schedule Castes and Tribes and proved to be one of the most amazing individuals posted in that position. He was not only passionately concerned about the condition of the tribals but brought an enormous and deep erudition to his support of their cause. This book will give you all the fascinating details of problems faced by shifting cultivators within the country and politically necessary solutions.

Shifting Cultivators and Their Development


SAHYOG PUSTAK KUTEER TRUST
SHIFTING CULTIVATORS & THEIR DEVELOPMENT
Dr. B.D. Sharma

By Dr. B.D. Sharma
From Sahyog Pustak Kutir,
1-A, Nangli Rajapur,
Nizamuddin East,
New Delhi 110 013.

Pp. 112 (2003)
Rs. 30
Available from OIB

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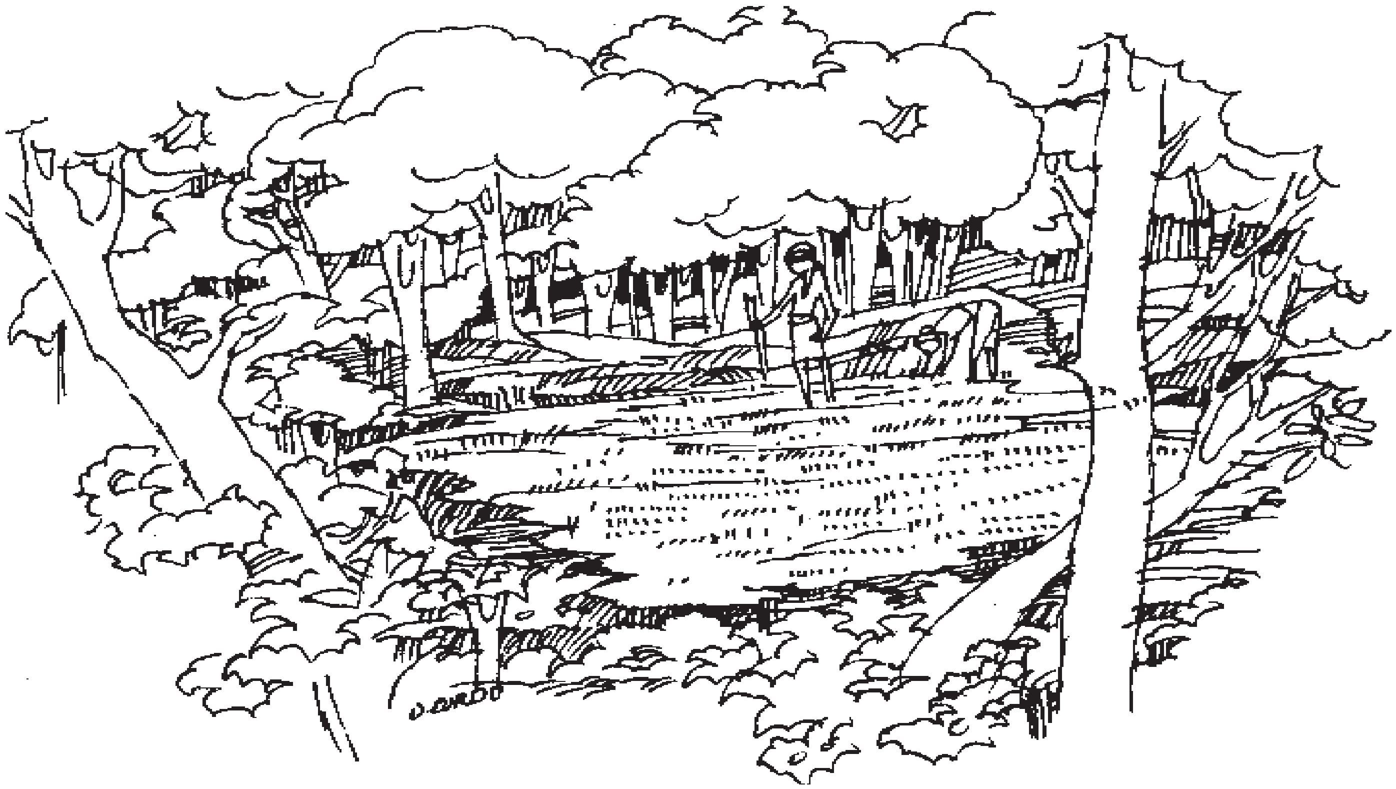
As has been brought out in this monograph, *Jhum* represents the most efficient use of natural resources, albeit, at their stage of development. The inner balance of the system is simply exquisite. It is based on optimum use of solar energy with multi-storied structure. There is optimum use of soil nutrient and sub-soil moisture with different root-systems reaching out to different depths. Similarly there is optimum use of climatic factors including rain with mix of seeds which sprout with the first drops of rain to the late comers which sustain till the last rains and much later. There is unbelievable complementarity amongst chosen crops which respond differently to vagaries of natures, attacks of pests etc. Swine husbandry, which invariably goes along with Jhum, is the best form of 'storage of surplus' which can be drawn upon in bad years. The entire community life is an experience by itself moving in unison (jhum) with the elements of nature, which may appear to outsiders as harsh and hostile, but in reality may simulate the Garden of Eden for those who belong to it.



Tending the Earth: The Organic life-style of Adivasis

Tending the Earth

TENDING THE EARTH
Traditional, Sustainable Agriculture in India
Winin Pereira

By Winin Pereira
Earthcare Books

Pp. 315
Rs. 290
Available from OIB

The late Winin Pereira emerged over the years as one of the planets's most persuasive defenders of the traditional, indigenous or non-western way of organising societies, technology and economics.

A former nuclear physicist who threw up his profession because of his intellectual convictions, Pereira had a vast following who read everything he wrote, which included essays on the Warlis or the chicanery behind the Enron deal.

In this book, Pereira dwells on traditional Indian agriculture and examines why it was one of the most advanced in the history of the world. He argues that a system that has lasted for thousands of years has proved its sustainability. In addition to this feature which the present day world is acknowledging with much aplomb, he notes the traditional system also rated high up in all other aspects as well: productivity, self-reliance, diversity and the depth of indigenous knowledge.

Tending the Earth summarises the wealth of information and ideas collected by Pereira over more than 25 years. It presents a holistic perspective which can be precisely used to check the perspective of the modern western world which respects no traditions except its own. You will find extracts from this book in the ***Source Book*** at different pages.

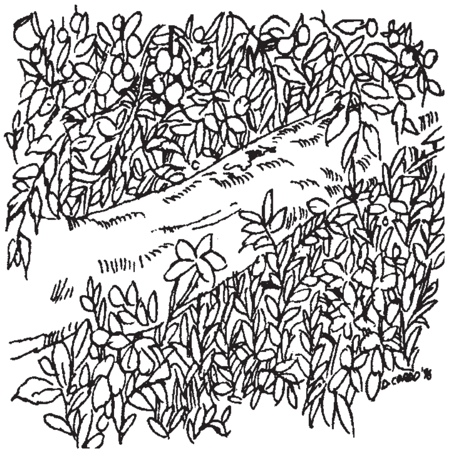
OIP is extremely happy that Earthcare Books has decided to keep this book in print. This will ensure that what it says about traditional agriculture will never die.

Organic Jhum

Debating Shifting Cultivation in the Eastern Himalayas: Farmers innovations as lessons for policy

By Sharma, E.

English; ICIMOD GP.O. Box 3226, Khumaltar, Kathmandu, Nepal. Email: elibrary@icimod.org;http:\\books.icimod.org



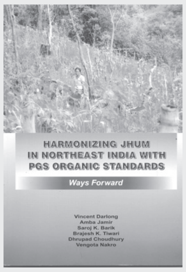
Most people see shifting cultivation as outdated and destructive, but farmers in the Eastern Himalayas still prefer to farm in this way. This study takes a fresh and unbiased look at the practice to find out why. It shows that indigenous farmers have much to teach the world about the efficient use of their landscape for combined agriculture and forestry.

Shifting cultivators conserve more forests on their land than any other farmers while maintaining crop productivity, avoiding soil degradation, and conserving biodiversity. The findings contain important lessons for policy makers and others: farmers' innovations can be used to improve shifting cultivation and adapt it to modem needs, rather than trying to replace it with alternatives.

(Source: LEISA INDIA December 2006)

Harmonizing PGS and Jhum

Harmonizing Jhum



By Vincent Darlong, Amba Jamir, Saroj Barik, Brajesh Tiwari, Dhrupad Choudhury, Vengota Nakro

Pp. 43 (2008)

This booklet argues in favour of allowing jhum cultivators into organic farming certification networks like the Participatory Guarantee System (PGS).

The authors (all from the northeast) make out a strong case for jhum arguing that jhum cultivation is far closer to organic agriculture and in fact has little to do with chemical farming. The booklet critically examines the negative features of jhum and shows how they are based more on myth than reality.

The book in fact is a good introduction to jhum cultivation in the northeast as a whole.Vincent Darlong and his colelagues are qualified people with their feet squarely planted in the perceptions of the common people of the north-east. It is the rest of the world that needs to acknowledge that it has been largely wrong about the eco-system demands of jhum; that jhum is far more environmentally suitable to its terrain than green revolution technology.

Jhuming: A Fast Disappearing Tradition of North East India

Jhuming or shifting cultivation refers to any temporally and spatially cyclical agricultural system involving clearing of land, usually with the assistance of fire, followed by phases of cultivation and fallow periods.

Cultivation is generally of mixed crops sown by dibbling (making planting holes in soil with a pointed tool, and putting plants or seeds in such holes) for one or two years. After a few harvests the land is allowed to lie fallow to recuperate for a period of 3-5 years or more, after which the cycle is again repeated.

It is reported that at any given time about 5-7% of the land in the hill areas of North East Region is under shifting cultivation, and about 40% [1.73 million ha (FSI, 2000)] of the forested portions of the hill areas have been under shifting cultivation at one time or the other.

At least 100 different indigenous tribes and over 620,000 families are involved with jhuming related practices. Broad estimates indicate that 80% of the total rural upland population of the North East depends on it as a means of livelihood.

Traditionally, shifting cultivation has always been the most preferred land use system amongst the upland farmers as it is cyclical and encompasses an array of land use activities engaging them through the year. A unique variation of jhum seen in the higher altitudes of Nagaland known as Alder-based 'jhum' system, is practiced among the Angami Naga farmers. Another variation, 'Bun' (pronounced 'boon') is common in the higher altitudes of Meghalaya where in only the undergrowth is slashed and buried under thin layer of soil and is later burnt gradually and slowly.

Paradoxically, for some time now, this method of slash and burn shifting cultivation, a way of life for thousands of years for the people of this region, has been viewed by non native external agencies as a cause of serious environmental problems, an inefficient form of agriculture, an impediment to progress of forestry and as an agent of destruction of forest biodiversity.

This view has been picked up by the Govt. and private players and is the underlying factor for introduction of many agri- and employment schemes including introduction of organic and sustainable farming techniques in the region.

On the other hand, ethnologists consider it as a diversified livelihood system that not only ensures sustenance but also conserves the rich cultural heritage associated with the practice.

Research studies on shifting cultivation are being carried out across the region by many agencies. These studies have shown that 'jhum' is an indigenous system of organic multiple cropping with higher economic and energy efficiency than many other forms of agriculture. Some studies provide conclusive evidence that 'jhum' is a system that conserves and promotes agro-biodiversity and ensures equitable access to land and forest resources.

A typical form of shifting cultivation in this region has six major stages:

(i) Site selection and cleaning
(ii) Burning
(iii) Planting / sowing
(iv) Weeding and protecting
(v) Harvesting: and
(vi) Succession (fallow).

The duration of the fallow period is influenced by the ease of clearing the vegetation and soil fertility levels following the slash-and-burn operations. It is believed the burning of slash returns nutrients to the soil through ash and kills microbes allowing relatively high yields.

Variations in Jhum practices :

Alder-based jhum: Particularly practised in the higher altitudes of Nagaland. Unlike typical jhum, the alder-based jhum system allows two harvests out of every four to five years. It involves four steps:

i) Pollarding of trees in the first year;
ii) Growing of primary and secondary food crops (including vegetables) as mixed crops
iii) Cropping repeated during the second year
iv) Field left fallow for two to four years to allow alder trees to grow before repeat of cycle.

'Bun' cultivation: Is more common in the higher altitudes of Meghalaya, around Shillong, East and West Khasi Hills. Bun is a kind of locally modified jhum. Here the destruction of forests (dominated by Pinus Kesiya) is only partial. Instead of complete clearing of the forest, only the undergrowth and lower branches of the trees are slashed and arranged over the land that has been prepared into parallel ridges and furrows. During the months of late February to early March, a thin layer of soil is placed over the dried plant biomass that was arranged over the ridges and burned. Burning here is gradual and slow, and may even take 2-3 days for complete burning. In recent years, application of organic manure in the form of cowdung before planting of crops has become common practice.

Policy relating to Jhum

Existing policies do not have space for jhum. There are of course a number of jhum regulation legislations in Northeast India, which inter alia look after jhum from inevitable practice to the need for regulating the practice from the perspective of environment conservation.

The following is just a sample of the many regulations on jhum cultivation which can be traced far back to over a century:

- The Sylhet Jhum Regulation, 1891.
- Balipara/Sadiya/Tirap Frontier Tract Jhum Land Regulation, 1947.
- The Mikir Hills District (Jhuming) Regulation, 1954
- The Garo Hills District (Jhum) Regulation, 1954
- Lushai Hills District (Jhumming) Regulation, 1954
- Pawi Autonomous District (Jhum Regulation) Act, 1983
- The Nagaland Jhumland Act, 1970

There are some government schemes which have been provided as livelihood options to the Jhumias. The people however consider these to be poorly conceived and far from meeting the requirements of their livelihood.

Studies and initiatives taken by various international and national agencies:

The economics and efficiency of shifting agriculture has been studied in Meghalaya and other states of North East India by a team of scientists led by P.S. Ramakrishnan in the early 1990s. These studies show that, far from being primitive and inefficient, jhum is an ingenious system of organic multiple cropping well suited to the heavy rainfall sloppy areas of the hill tracts. The economic and energetic efficiency of jhum is higher than alternative forms of agriculture such as terrace and valley cultivation. This is mainly because unlike jhum, terrace and valley cultivations generally use expensive external inputs which often get leached or lost in the heavy rainfall on hill slopes. Besides terracing is labour intensive.

More recent studies in 2005-2006 show that jhum conserves and promotes agro-biodiversity, contributes to forest regeneration and management through fallow management and ensures equitable access to land and forest resources and-Many of the practices conserve natural resources, including soil.

Studies by NEPED (Nagaland Empowerment of People through Economic Development) have found out that much of the non timber forest produce (uncultivated vegetable, medicinal plants and firewood) are harvested from jhum fallow. It was also observed that about 50% of the vegetables being sold by women vendors were collected from jhum fallow land. Another study has found that the natural regeneration of trees in jhum fallow ranges from 450 - 2200 trees per hectare and depending on the management practices during the last jhum cycle, the volume of standing trees can range from 30 to 500 cubic metres per hectare. It also found that Jhumias are extremely reluctant to give up this practice as it meets innumerable needs of their life style.

Strengths of jhum: Organic practices

Nutrients from plant biomass

No chemical fertilisers and pesticides, not even farmyard manure is used in jhum. The main source of nutrients is from burying of the slashed vegetation. The uprooted weeds are the source of nutrients because of their quick decomposition rate. In the process, less nutrients aree drawn from the soil nutrient pool. Such efficient nutrient management strategy during the cropping phase compensates the nutrient loss to some extent that may have taken place during vegetation removal.

1. Crop mixes

At least 30-60 crops are grown simultaneously in a given cropping period.

2. Effective fallow management

Remnants of crop phase continue to yield edible products at least during the first few years of fallow phase.

3. Community participation

During slashing and burning of the vegetation the entire community is involved and roles and responsibilities are shared among the community members.

4. Strong traditional institutions

Considering the importance of jhum as a livelihood of the people and the decision making power vested in the traditional institutions, jhum acts as a binding force among the community members and helps ensure the authority of the traditional bodies. Jhum encourages community bonding and strengthens village level institutions.

5. Balanced diet

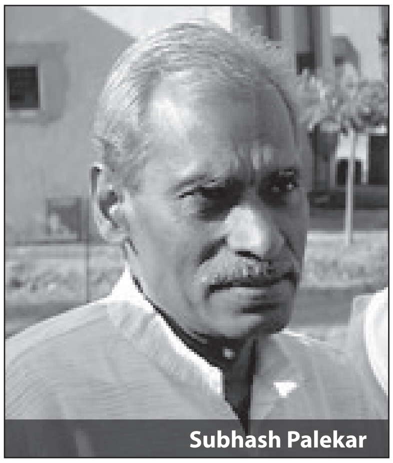
In an otherwise impoverished environment, jhum with its multiple products derived both from cropping and fallow phases is the only source of a balanced diet for the jhumias.

6. Optimisation of land, labour and other resources

The land is identified according to its suitability for specific crops which naturally ensures biodiversity.

Zero Budget Natural Farming: The Palekar Phenomenon

Much of the reason why organic farming has taken huge strides in this country is because of eloquent speakers like Subhash Palekar. Wherever he goes, Palekar draws record audiences. Farmers are disgusted with agricultural scientists from universities, since they have no solutions left to offer. Palekar on the other hand offers simple solutions. Some farmers swear by his teachings. Others say they do not work all the time. However, more than most others, Palekar has dealt a mortal blow to agribusiness and its agents. For this he must be congratulated.


Subhash Palekar

For more information on Palekar's work, please go to his website:

http://palekarzerobudgetnaturalfarming.com/organic.html.

You can also order all his three volumes from Other India Bookstore or his home address:

19, Chanda Smritee, Jaya Colony, Near Telecom Colony, Sai Nagar Post, Amravati - 444 607, Maharashtra. Cell: 94237 02877, 94236 01004, 98503 52745

Email: palekarsubhash@yahoo.com; tejomit@gmail.com

Palekar has so much to say about zero budget natural farming and its opposites that it fills the pages of three equal size volumes.

The first volume begins with a sharp attack on the green revolution and its destruction of the backbone and spirit of the Indian farmer. Like most of us, he calls the green revolution a fraud, supported by fraud scientists. Revolutions, he observes, are meant to carry people to happiness, but the green revolution has driven both farmers and consumers to suicide and ill-health.

After the criticism of the green revolution, it is the agricultural universities that get the famous Pakekar knock on the head.

Palekar then discusses what is natural agriculture or natural farming. A Fukuoka bhakta, he discusses details of natural farming as he understands them and the techniques associated with it.

He then introduces the reader to the four-wheel rath of natural farming techniques which include bijamrut, jiwamrut, achchadana (mulching) and soil aeration.

Just this single volume will teach you all that you really need to know about 'zero budget natural farming.'

In the Principles of Spiritual Farming (Vol 2), Palekar discusses the role of carbon and nitrogen in soil fertility. Most of the chapters deal with soil mulching and live mulching. Four chapters are dedicated exclusively to mulching, particularly straw mulching, and sugar cane trash.

In live mulching, Palekar deals with mycorrhyiza and their relationship with the roots of plants. He has much to say about intercropping and companion cropping (their contributions to mulch), nitrogen fixing legumes, growing spices, and working with wind walls or breaks.

There is an interesting chapter on waaphasa, the fourth spoke in the wheel of natural farming. Altogether much information on mulching as a whole of which one finds little in other books dealing with natural agriculture.

We have to agree with Palekar that we still need to do more mulching than we are capable of or inclined to at the moment. That is our loss and the more we ignore mulching, the more difficult it becomes for us to be good organic farmers.

The third volume discusses various techniques of ZBNF in relation to the growing of different crops.

Rice gets three chapters. Also discussed are sugarcane, banana, coconut, areca nut, coffee and vanilla cultivation, wheat, jowar, pigeon pea, maize and cotton.

The final chapter of volume III is kept for techniques of natural plant protection.

Throughout the three volumes, Palekar also unloads harsh attacks against the use of exotic earthworms and organic farming as well. In fact, he criticises organic farming more than he does conventional chemical farming. Palekar has many followers and many farmers claim great success with his simple remedies. He maintains an active website, where people can write in with queries which he answers.

Recently he has published a complete directory ('South India Model Farmer's List') of farmers who practise his method of spiritual farming. The booklet can be ordered from Palekar for Rs.10. May his tribe increase!

The Philosophy of Spiritual Farming

The Philosophy of Spiritual Farming
Subhash Palekar
Amravati
(Maharashtra)
INDIA

By Subhash Palekar

Pp. 200
Rs. 150
Available from OIB

The Principles of Spiritual Farming

The Principles of Spiritual Farming
Subhash Palekar
Amravati
(Maharashtra)
INDIA

By Subhash Palekar

Pp. 200
Rs. 150
Available from OIB

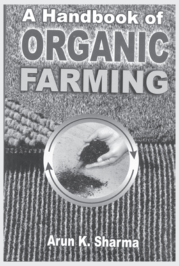
The Techniques of Spiritual Farming

The Techniques of Spiritual Farming
Subhash Palekar
Amravati
(Maharashtra)
INDIA

By Subhash Palekar

Pp. 232
Rs. 150
Available from OIB

A Handbook of Organic Farming



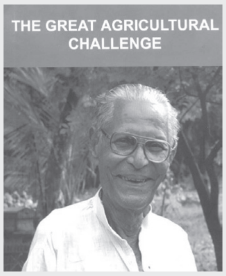
By Arun K Sharma

Pp. 628 (2008)
Rs. 850 (HB)
Available from OIB

Though Arun Sharma is an academically trained agricultural scientist, he has been steadily promoting organic farming through a series of well researched books. Sharma travels considerably to gain first hand experience. The present work lays out the degenerative impacts of chemical farming, not only on farm but away from the farm. It next examines various different organic farming systems in vogue.

A separate chapter is dedicated to managing the transition from chemical to organic farming. There are detailed chapters on soil environment, soil organic matter and humus, in-situ manuring, ex-situ manuring, production of compost and vermicompost, ecological pest management, economics, marketing and research.

The Great Agricultural Challenge



By Bhaskar Save

Pp.136
Rs. 100
Available from OIB

Well over 84 years, Bhasker Save, one of India's best known organic farmers, wrote a detailed letter to Dr M.S. Swaminathan, demanding a fundamental reorientation of India's agriculture. He bluntly told Swaminathan: 'You are the "father" of India's so-called "Green Revolution" that flung open the floodgates of toxic "agro-chemicals," ravaging the lands and lives of millions of Indian farmers over the past 40 years.' Swaminathan responded. The book contains the original Bhasker Save letter and the subsequent correspondence. The book also contains a critique of the Indo-US Agreement on Agriculture.

Earthworm: Cinderella of Organic Farming

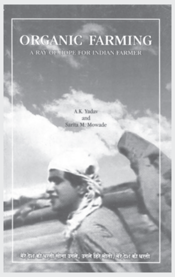
Radha D. Kale
Earthworm
Cinderella of Organic Farming
A PRISM Book

By Radha D Kale

Pp. 96 (1998)
Rs. 120

Another simply written authoritative book on earthworms, their role in soil fertility and waste management. Kale also discusses methods of vermiculture, preparation of worm beds, vermiwash and in situ cultivation of earthworms. The book begins with a factual note on the biology and function of earthworms and ends with a chapter on organic manures in which earthworms have a role. Several pages of colour pictures on vermiculture. Important text for organic farmers to study.

Organic Farming



By A.K. Yadav and Sarita M Mowade

Pp. 126 (2004)
Rs. 125
Available from OIB

This is a very lucid and informative introduction to organic farming in India and the various issues connected with its promotion. The authors discuss the concept of organic farming, changes in the cropping system required by it, organic manures and compost, biofertilisers, biodynamic preparations, EM technology, pest management, government policies and sources of information. There is also a book list consulted.

The Earthworm Book

The Earthworm Book
Sultan Ahmed Ismail

By Sultan Ahmed Ismail

Pp. 111
Rs. 150
Available from OIB

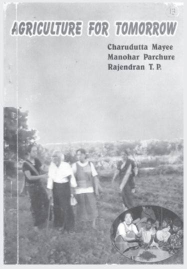
This little book contains practical information about the place of earthworms in local ecosystems, the various types of earthworms present in the soil, their anatomy, the economics of composting and vermiwash production and the application of these in organic farming from vegetables to crops.

Dr. Ismail also provides invaluable and practical information about how to set up vermiculture, vermicomposting and vermiwash units.

Throughout the book, Dr. Ismail stresses the importance of working with nature and describes the hazards of disturbing the ecosystem in the name of biotechnology and so-called advanced farming practices. He firmly advocates the use of local earthworms in preference to exotic species.

Although the book is serious in intent, the language used is fairly simple and scientific terminology has been kept at a level that can be easily understood by the lay reader.

Agriculture for Tomorrow



By Charudutta Mayee, Manohar Parchure and Rajendran T.P.

Pp. 72 (2001)
Rs. 50

Three knowledgeable people write on why the present dependence on chemicals is completely misplaced. They argue that plants hardly require chemicals since they get everything they need from the natural environment, including the air. They argue for a paradigm shift in agriculture policy. A smart tract for sustainable agriculture.

Organic Farming wrt Cosmic Energy

Organic Farming wrt Cosmic Energy
Non Violence
Deshpande - Farming Technique
- Aryakrishak
Mohan Shankar Deshpande

By Mohan Deshpande

Pp.240
Rs.250
Available from OIB

This is an introduction to the Rishi-Krishi Despande technique of organic farming. Mohan Deshpande is from Azra near Kolhapur where he has his own farm. He has travelled widely and has several followers who implement his technique.

If Palekar is a disciple of the late Masanobu Fukuoka, Deshpande rejects Fukuoka in no uncertain terms. He insists that there is no such thing as 'do-nothing' farming and what is in fact required is hard work and strict adherence to scientific discipline. Deshpande claims his technique derives from the culture of ancient India's rishis.

Basically, Deshpande recommends taking soil from the base of a banyan tree (he calls it 'angara') which is then used to enhance the population of microorganisms in the field. The second step is the preparation of amrutpani, which he describes. The third is seed dressing and the fourth, mulching.

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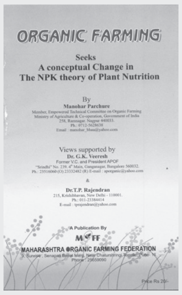
The sage Parashar stated the ultimate truth 'Jantunam jivanam krishi' meaning the agriculture depends on the life forms in the soil. The livelihood of farmers depends on this life in the soil. Another sholka 'Kand bijanam madhughruten lephah' meaning coat the seed with honey and ghee (clarified butter) reveals the method to increase the life in the soil. It is very easy to understand the meaning of these Sanskriti Sholkas. But to translate them in to practice is more difficult than climbing the Himalayas. The correct use of these shlokas in practical agriculture to increase the productivity involved many years of excessive physical and mental labor for me. Thirty years of my youth were spent in this pursuit. Finally I succeeded. My method was tested and perfected on the lands of a thousand farmers. We had very satisfactory crop yields. Then I wrote the book in Marathi 'Rishi-Krishi Deshpande Technique' of Agriculture. This is a simple technique. Even a non-educated farmer can easily learn and implement the method with good results. Any type of farm or orchard including sugar cane, paddy, gram, wheat, grape, cotton, banana, orange, guava, mango, coconut or any other variety is benefited by the use of the technique. The yields are better compared to the use chemical fertilizers and it is not necessary to wait for years to see the improvement which is seen right from the first year. It is equally effective for crops fed by the canal water or the rains and for black cotton soil, red soil, alkaline soil or unproductive fallow lands. The system is not a trick of magic or any other unnatural phenomenon. It is based on certain scientific facts which give the required good results. Further, it saves a lot of money as no chemicals are used in growing the crops or fighting the pests and diseases. You will be surprised to learn that one acre of cultivation costs only one hundred rupees. Industrial machines costing crores of rupees are protected by the fuse wire costing only five paise. Deshpande Krishi technique acts as the fuse wire between the cosmic energy and your farm. Whether you have a TV set in Amitabh's palace or in Dharavi zopadi, it will show the same dance by Hema Malini. Similarly, this book will help every farmer whether he resides in a modest house, a zopadi or a palatial bungalow.

Organic Farming

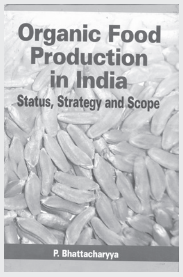


By Manohar Parchure

Pp. 33
Rs. 20
Available from OIB

Parchure argues forcefully for a conceptual change in the NPK theories guiding present day agricultural policy makers. The theory has ruined millions of farmers and their livelihoods. He propagates returning speedily to working with living soils, where the microbes normally present in cowdung, multiplied with jaggery and besan, provide all those nutrients that plants really require from their environment.

Organic Food Production in India



By P. Bhattacharya

Pp. 182
Rs. 495
Available from OIB

P. Bhattacharya, the author of this book, retired recently as Director of the National Center of Organic Farming, Ghaziabad. He is an expert on bio fertilizers.

The present book deals with organic farming and the most important chapters are concerned with the creation of organic nutrition for the soil. More than 20 different ways are discussed. Bhattacharya also deals with biological control of pests and diseases. There are also two chapters on organic market development and on standards and certification. Dr. Bhattacharya had access to official data and therefore this book may be considered as an important source of information on organic farming trends and activities in India.

The Ecological Village

The Ecological Village

By M.G. Jackson

197 (2005)
Rs.200
Available from OIB

Jackson argues that individual organic farms here and there may not provide any genuine and permanent relief to the destruction of our soils through the use of chemicals and pesticides. According to him, it is necessary to consider the whole village as an organic unit (as was done in the past), if we wish the organic farming movement in India to gain real momentum.

In spite of the evidence of all the thousands of traditional crops and their varieties that have been developed over millennia by farmers on their own land, selecting seeds, storing them, replanting them, and continuously improving on them, the seed and biotechnology industries claim that farmers cannot carry out research on crop improvements. Why farmers suddenly 'lost' this ability a few decades ago remains unexplained.

Farmers do not appear to be selecting now because they already have so many varieties. Though they may need higher yields, they have learnt that there are limits to yields if finer grain, good flavour, and other qualities that only people who consume appreciate, are also required.

Seed selection may be occurring normally. When farmers use a random sample of the seeds from a given field for the next year, they are selecting for the multiple characteristics which will give the best yield under the very specific conditions of their fields. This is because the plants with the highest yield and survivability will contribute a higher proportion to the random sample than the others. And the repeated collection of such samples over the years will automatically also give the highest yields possible for that particular eco-region, even as those conditions change due to climatic variations or other environmental damage.

There is much experimental selection, for instance, by farmers exchanging, borrowing or buying seed from farmers in other areas who have obtained good yields in conditions similar to their own. But here, too, in addition to the conscious selection, the random selection process will be at work for characteristics other than those intentionally chosen. Grain banks which mix up seeds from a large number of farmers, destroy the selection for particular farmers' fields, though they will be preserving it for the region, if conditions are fairly uniform.

It is, therefore, important to recognise the need for farm research to be restricted to farmers themselves.

(The late) Winin Pereira

CHAPTER SEVEN

Organic Seed

Interview: Vijay Jardhari

Beej Bachao Andolan, Village & P.O. Nagani, District Tehri Garhwal - 249175, Uttarakhand
Cell: 09411777758, Email: vijayjaradhari@gmail.com

Vijay Jardhari comes from a very traditional rural farming family background from the remote hills of Uttarakhand and his sensitivity to issues close to the land and its resources come from him being a farmer and an active member of the Chipko moment. Beej Bachao Andolan, of which he is the heart and soul mover, has been termed in India as the next big people's movement after Chipko of the 1970's. BBA today, is more a school of thought, a philosophy, a way of life, that treats agriculture not in isolation but as an integral part of an ecosystem and the culure of the people of Gharwal.

Nyla Coelho: Vijay ji, could you start at the beginning?

Vijay Jardhari: After the intensity of the Chipko moment had petered down I returned to the village to continue with my farming activities. In the village, I found that synthetic fertilisers and hybrids had been introduced with active promotion by government agricultural extension officers. The hybrid seeds were expensive and needed fertilisers.

Initially the yields were high. Then came the pests, which again meant more inputs and expenses for the farmers. The yields were steadily going down and costs were going up and instead of the diversity in crops we had only monocultures. It was clear to me that there was something wrong, and, as is the traditional practice, I started talking about this to the village elders. They immediately pointed out that this was because the crop diversity that sustained farming in the region and brought in natural pest management measures had been interfered with. The natural pest controllers were not in place any more and we had lost our seed diversity.

Kya hai Jungle ke upkaar
Mitti, pani aur bayaar,
Mitti, pani aur bayaar,
Zinda rehnain ke adhaar
(What favours do forests bestow-
Soil, water and air
Soil, Water and air,
The very basis of survival.)

This campaign song of the Chipko movement was firmly rooted into my thinking, it sort of came back as a flash of wisdom, an indicator, that something was seriously going wrong with our land and the hills- our home.

NC: It must have come as quite a shocking revelation. What was your reaction?

VJ: I took a wild guess that our remote villages with difficult access may not have as yet come under the influence of hybrids and fertilisers. Immediately, I started on an exercise of traveling to remote villages, mostly on foot, in the hope that some traditional seeds would still be available. My search-research though, it meant long extended trips to remote inaccessible hamlets, brought some delight. Traditional diversity and seeds were still alive in remote pockets with rather difficult access for extension officers and the big seed and fertiliser company representatives.

Vijay Jardhari

I spread the word among local villages, through them to their friends and to local contacts from the Chipko moment to: a) be on the look out for traditional seeds, b) keep the gene pool alive, c) designate a part of their field only to keeping traditional crops alive, and d) to pass on some seeds to me.

Very slowly, in the consequent sowing seasons, collectively, we were able to regain our diversity, rebuild our gene pool and also spread it to wider areas by distribution. It was an indication that our traditional farming was returning slowly to the hills.

We have friends in Himachal Pradesh who have taken seeds to reclaim their own agriculture and within Uttaranchal, seeds have come from and gone to areas across a radius of 200 kms.

NC: What is the traditional agricultural practice in the Gharwal region, and what was it being replaced with?

VJ: As many as 80% of the people in the Garhwal hills practice subsistence agriculture. The land holdings are small, fragmented and scattered over difficult mountain terrain and terrace slopes. The ecosystem of the Garhwal region, the cultural traditions and farming systems are closely interconnected. One sees an integration of forests, cultivated land, pastures, livestock, water, biodiversity... into the cultural ethos of this region. Barely a century ago this region was agriculturally self reliant because of its crop diversity. At most, shopping expeditions to towns were undertaken for clothing, match boxes and kerosene. Traditional farming entails cultivation of multiple crops, millets being a major component of the farm produce. Strangely millets were gone and so was the tradition of bara anaj (a mixed crop of millets,cereals and lentils).

When guests visited our homes, we served traditional food with great pride as an honour, and millets which were our staple, were not even brought to the table. We now found that the foxtail ragi was not even available for home consumption. The hill culture is strongly rooted in song and dance. Our women connect easily to songs. Ghanshyam Salani, a folk poet of the Chipko moment gave the campaign a song about ragi, the hillmen and the strength and health that we were losing because of ragi disappearing from our diet. The song caught the imagination of the locals and had an instant impact. It helped the campaign greatly. They started saving seeds.

Around this time big export companies came here with the proposal to cultivate soya bean for export. Government and the scientific community were also in favour of replacing traditional grains with soya cultivation. We had to launch an aggressive campaign against soya bean cultivation because soya bean in itself had limited usage. It did not feed our family nor did it meet the fodder needs of our animals. Subsequently, a factory set up by the govt. for processing soya had to close shop. Today less than 10% of the original soya cultivation goes on.

Support came from the scientific community and some well known names of the Chipko movement.

NC: You mention support...

VJ: Yes, support was large, Kuwar Kusul of Chipko and Sab Singh helped network the BBA. In the initial years, Dhoom Singh Negi, Sudesha Bahen, Dr. Vir Singh and Biju Negi were also with us, but Vir Singh's canvas of operation grew so wide and large that his involvement reduced. The work went on. In 1995, Kalpavriksh, Delhi was with us through the agitation against the building of Tehri dam. During the awareness campaign, we organized a 50 day youth yatra across Uttaranchal from Arakot to Askot Pithoragarh (from Himachal to Nepal border). The 50 day padyatra was undertaken in three phases with seed exchange fairs and awareness programmes. This yatra groomed young local leaders like Raghubhai, Bippin Jardhari, Dihpal Rajendra Negi, Bhopal Singh and Jaya Iyer, Ajay Maharaju, activists from Kalpavriksh and others. The yatra was the success story of regaining the bara anaj tradition of the Kumon and Garhwal hills. A major hurdle was cleared, we had reclaimed our seeds. Bara anaj was our honour crop that kept our community in unity and health. It was in a way, a moment to regain our cultural moorings and sovereignty. The strength of Garhwal is its women who are the carriers of tradition, builders and binders of communities. Sudesha Devi and Savitiri Devi need special mention here, their role in leading the movement is significant. Our impact may not have been of earthshaking significance, but when the Uttarkanchal state was formed, one of the first things it did was, create the Organic Commodity Board.

Beej Bachao Andolan was one of the beneficiaries of the aid that came from Arundati Roy's Booker prize money in 2002. In 1998, BBA was awarded Sanskriti Sammaan by the Vice President of India, Shri Krishna Kant at a special ceremony. BBA's staunch advocacy and dedicated pursuit of peoples causes places it high among people on the acceptability list. Also it not being organized into any formal structure gave it authenticity and pride of place. All activities were supported by individual donations or self generated through sale of literature and organic produce. Writing is something that the activists of Chipko moment were inculcated into by Sunderlal Bahuguna, and since then, it has been our best tool for advocacy. Rajiv Khedkar, Academy of Development Science, Pune extended his support to the publication of Barahnaaj.

NC: Has the creation of an independent state and the council helped?

VJ: The on-field outreach still leaves much to be desired. However, on creation of Uttarakhand State, an Organic Commodity Board was constituted by the Government. It took up the important task of promoting organic farming. According to its statistics, 24,000 hectare area has been covered under organic farming in the year 2007-08. 44,000 farmers are practising organic farming in the state. Of them, the council is directly associated with farmers and NGOs covering 16,000 hectares of land. 27,000 farmers are partners of the council which has so far done a business of Rs. 7 crores. Cash crops and mono crops do not figure under these products that include basmati rice, mandua, ramdana, rajma and other pulses, turmeric and other spices. The above figures relate to certified organic farmers. If one were to take non certified farmers, we find that 90% of their land is un-irrigated and does not use any chemicals in farming. In these areas, what is practiced is mostly natural organic farming. Such farmers count in hundreds of thousands. 50% of farming in Uttarkhand is dry land farming and is by default organic. Of the 13% of irrigated farms 50% may be using synthetic inputs. A Japanese company manufacturing children's food is importing mandua from Uttarakhand because of its high health value for growing children and its non contaminated nature.

NC: Has there been a change over since the movement? What about the innate wisdom of the community itself that was laid aside through the introduction of alien crops and methods?

VJ: BBA at the collective level has had direct impact in the three regions in Garwhal. The story of BBA is essentially a story of the reclamation of traditional mountain agriculture. It is the story of the common hill farmers, who are, the crop and soil scientists, the hydrologists, the foresters, weather experts, the veterinarians, the plant and the disease specialists and virtually everything that a farmer is.

Starting with a mere two traditional seed varieties collected as a hand full of grain, the Andolan has through personal efforts and through extensive awareness generation, preserved or has knowledge of over 350 traditional varieties of rice (of which 100 varieties are grown every year), about 200 varieties of rajma, 30 of wheat, 12 of mandua , 8 of jhangora, 3 each of kauni and cheena, besides those of harhar, bhatt, lobiya and many other indegenous varieties growing in the various parts of Garhwal.

When BBA started talking about returning to traditional forms of agriculture in the 1980s it was accused of being anti development and of seeking to take both agriculture and society backwards. Today three decades hence, it stands proud as a grassroot level farmers moment.

In 2003 Uttarakhand was officially declared an 'Organic State.' This is not to say that this change has come about entirely because of Beej Bacho Andolan, But then, its contribution towards this through persistent raising of issues at all peoples fora cannot be negated either.

NC: Since the entire philosophy of BBA is seed sovereignty and traditional practices, what is your take on GM and who are the culprits?

VJ: Our movement is of the opinion that seeds have to be totally natural, that traditional seeds must be given precedence over hybrids. BBA demands a total ban on GM seeds. Our demand from Uttarakhand Government is to declare it a GM-free state. If you ask me who is hurting agriculture most? I think farmers at present are mostly hurt by government's wrong policies and wild animals, especially the wild boar and monkeys are a real menace. I believe, in the absence of natural calamity, farmers need no help from anywhere, they are quite self-reliant and self sufficient as a community.

NC: In your opinion has the movement achieved what it set out to do?

VJ: I cannot really say how effective the movement been, but this much is for sure that people who were once blindly running towards new agriculture are now beginning to ponder over the issues that we have raised. Farmers now say, they are beginning to realise that a return to the traditional principles of agriculture is the only sustainable and sane way ahead. The outcome has been that, traditional practices have returned and our community is again well integrated.

NC: How would you sum it all up?

VJ: BBA is a sorry reflection of a country moving away from its strong roots, where farmers are marganalised, where women's role in farming is ignored and goes unrecognized, of policies that are influenced and forced by heavy corporate interest, where people constantly need to struggle to retain their natural resources, their livelihood options, their cultural moorings and indeed their sovereignty.

The Beej Bachao Andolan of Tehri Garhwal

Post Nagni, District Tehri Garhwal, Uttarakhand. Pin: 249 175

Phone:01376-275221/Email: bijunegi@nde.vsnl.net.in Website: www.bba.prayaga.org

The Beej Bachao Andolan, as the name suggests, is a local two decade old movement to save and conserve indigenous seed varieties and local seed diversity. It is also engaged in defending the interests of small farmers, promoting traditional agriculture and knowledge systems. On the advocacy front it is working on demanding legal farmer status for women, scientist status for farmers and direct representation of farmers in policy decision forums of the Government. Vijay Jardhari says 'We see our fields as our teacher and we try to popularise good practices. We also warn people about the dangers of chemical fertilisers and pesticides. Farmers are once again beginning to farm organically/naturally.'

(Source: Communication with OIP and Website.)

Seeds for Life (English)
By Biju Negil, Dhoom Singh Negi

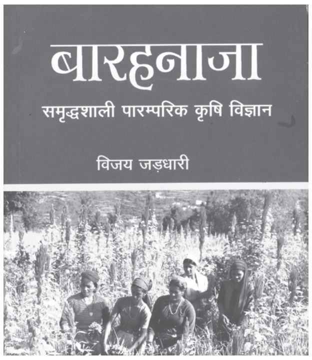
Publisher: Chipko Pustkalayaevam Sanghralaya, (Chipko Library & Museum)

Khadi District, Tehri Garwal, Uttarkhand

This small booklet prepared by the Beej Bachao Andolan is an excellent introduction to the movement as it evolved in Tehri Garhwal in North India. The Andolan has done extra ordinary work with very little funding to conserve and protect indigenous seeds and to ensure their continued use.

Barahnaaj (Hindi)
Vijay Jardhari

Publisher: Academy of Development Science, Karjat District, Raigad - 410 201, Maharashtra



This book on traditional science by Vijay Jhardhari examines various traditional seeds and the entire science of conservation as it had evolved from the indigenous farming communities.

* * *

Barahanaj is the cultivation of twelve food grains, a traditional mixed cropping system done prior to the Kharif season. Depending on the region, these seeds are sown from mid-May to mid-June and harvested from mid-September to mid-October. The fields are left fallow after harvest and prepared again at the end of March. Paddy and barnyard millet are sown and harvested by end September. Followed by sowing of wheat, barley and masur dal in the Rabi season and harvested by end April. Followed by mixed cropping of twelve grains in the third year. Mandua Ragi (finger millet) is the main crop. Amaranth, rajma (kidney beans), lobia, horse gram, bhatt (traditional soya), buck wheat, sesame, bangjeer (tilhan - an oil seed), makka, green gram, black gram, local gram varieties etc. are all sown together. In some regions, more or less than twelve grains may be sown together.

Traditionally, these crops were bartered for salt, but now they have good demand in the plains too. Amaranth, maize and sorghum plants are tall. Kidney beans climb on these tall plants. These crops do not compete with each other. On the field bunds and rocky parts of the farm, lobia, black gram, local gram, horse gram, green gram and traditional soya are grown. Traditional soya is considered the best among the dals for humans and farm animals. Its flour is given to lactating cows to increase milk production. These cereals, pulses, and oil seeds provide all the nutritional requirements of the hill communities.

Beejon Ke Virasat (Hindi)
Editor: Kuvar Prasun

Publisher: Chipko Publishers, Khadi, Post Jadal, Tehri Garwal 249 147

Kheti Ek Anmol Dharohar (Hindi)
Vijay Jardhari

Publisher: Gorukhpur Environmental Action Group (GEAG), P.O. 60, Gorakhpur 373 001, Uttar Pradesh

Pahadi Kheti: Kisanon Ka Paramparagat Vidnyan (Hindi)
Vijay Jardhari

Publishers: Himalay Trust, 274/2, Vasant Vihar, Dehra Dun 248 006

A short history of plant breeding

The 19th Century: The Cloning of Plants versus Biodiversity

According to the dictionary, 'variety' characterises that which is varied – or diverse – the contrary of uniformity. Modern 'varieties' of wheat, soya, corn (maize), colza or tomato, etc., consist of plants that are genetically identical. These plants are thus clones, the very contrary of what the term 'variety' stands for. From the micro-biological point of view, a clone is defined as 'a population of genetically identical organisms. The word 'clone' disposes us to focus on the result obtained, i.e., the homogeneity and stability of cultivated plants, regardless of the method by which these plants were obtained.

The method of replacing a plant variety by the best clone extracted from the variety was invented in the beginning of the 19th century by British gentlemen farmers (called the 'Ricardians'). They were keen to extend the principles of the industrial revolution – the search for standardisation or uniformity and stability of production – to the living world.

Through keen observation these farmers found that their cereals – wheat, oats or rye – breed 'true to type'. Each plant conserves its individual traits from one generation to the next. They did not know why this was so but that did not bother them. When they discovered an interesting naturally isolated plant, they reproduced and multiplied it. If they found the clone really promising, they cultivate it thereafter, year after year.

In 1836, John Le Couteur codified this practice of his colleagues. He reasoned that since we cultivate 'varieties' in which every plant conserves its individual traits from one generation to the next, we could 'isolate' the plants that are the most promising and grow them as individuals separately. (Consequently we would reproduce and multiply them individually to clone them). Then we could select the best clones that we had thus obtained and replace them for the variety with which we had initially started. The method thus involved, first, extracting the clones from a given variety, followed by selection of the best clones. The gains that could be expected from this method depends thus on the importance of the inter-clonal variations that are available to the breeder. If these variations are important, then the gains will be significant. If the variations are marginal, so will the gains.

Le Couteur, precise and scientific in his work, was very conscientious in naming his invention. He speaks of replacing a variety with a 'pure sort'. He further states clearly that a 'pure sort' was obtained from a single grain or ear. His successors – professional scientists – did not show similar discernment. There must have been a reason for that.

Logically speaking, the proposal to improve and replace a variety by the best plants of that variety is undisputable. It is really a tautology, as one can always obtain better results by replacing a variety of objects by the best from among them. This holds, whatever be the nature of the objects. Here, since we are dealing with living organisms, the improvement is particularly independent of their manner of reproduction. This last point, although evident, is very difficult for specialists to accept simply because it challenges – as we will see later – their schooling of almost a century in agricultural genetics and the practice of selection.

In any case from the bio-logical point of view, things are very different. The acknowledgement that biodiversity has an essential role to play is the most interesting development that has taken place in these last 25 years in agronomy and especially in biology. The Rio conference is ample proof of this. It is noteworthy that the rural civilizations out of which we have grown, were well aware that biodiversity protected them against all odds. Note also that these civilizations created all this enormous biodiversity which we are now squandering. The modern agricultural arsenal of machinery, chemicals, sprays and irrigation – in one word, the cheap energy of the industrial petro-culture – made us forget that agronomic research was meant to do agronomy. That means getting done for us by nature free of cost what we are now doing with the big stick of ecologically, humanly, economically and socially devastating and ever obsolete industrial means.

A second explanation is linked to the nature of the living itself. A heterogeneous, unstable variety cannot provide a base for acquiring proprietary rights. On the other hand, a clone – homogeneous and stable – can be reproduced from generation to generation (from the biological point of view, it could be called a sort of living-dead or wraith) and can very well be appropriated. Each of these wraiths can be described in such minute detail as to be clearly distinguished from its neighbour.

In France, around 1920, Distinction, Homogeneity and Stability (DHS) constitute the criteria for the first system created for the protection of breeders' rights. In 1961, this French system is adopted by the European Union in connection with the UPOV treaty. Ironically, the negotiators at the UPOV treaty fail to define 'a variety', the very object which in fact they seek to protect! Easy to understand, DHS defines a clone – the contrary of a variety.

Note that this system of protection safeguards the plant breeder against piracy of his work by his competitors. It reserves the right of the breeder and his associates to sell seeds of their clones protected by the DHS criteria. There is no question of genetics yet and the farmer is free to keep seed grains from his harvest. For the traditional seed breeders – excellent agronomists, in love with their plants – that is well

Seed savers of Sahaja Samrudha

and good enough. For the agrotoxic transnationals who took over the seed business, that system is not sufficient for their purposes.

In short, within two centuries, selection strives to replace unstable heterogeneous varieties which by their very nature cannot be appropriated with proprietary clones. Dolly (the cloned sheep) is nothing but the extension of this technique applied to mammals, which makes evident the immediate and irreversible destruction of biodiversity implied by this double secular devotion to cloning. It is dreadful and revealing that INRA (The National Institute of Agricultural Research of France) chose to illustrate a page in Le Monde (a leading French newspaper; 12/11/03) dedicated to 'Agronomic Research and its Future' by a herd of cloned cows...

Industrialization and privatization of living things evidently go hand in hand.

The 20th Century: Hybridization or Captive Clones

In the course of the 20thcentury, seed selection is dominated by the phenomenon of hybridization, the so-called 'hybrid varieties' or the manufacturing of heterozygotic clones. Just go through a seed catalogue or cast a glance at the shelves of a seed store and you will find that almost all 'varieties' available on sale are 'hybrids'. The interesting point for seed breeders is that these clones do not conserve their characteristic traits from one generation to the next. In other words, when grown in the field, these clones lose the characteristic traits which prompted the farmer to buy them in the first place. In this way, the seed breeder achieves his goal which is to separate production from reproduction. Production can remain in the hands of the farmers but reproduction becomes the seed breeder's monopoly. The farmer is thus obliged to purchase the seeds of his heterozygotic clones each year. Say 'hybrid variety' and you say Terminator, only Terminator mystified in terms of 'improvement'.

'Terminator' is a transgenic technique patented by US State-sponsored research, in collaboration with a private company, to produce plants whose offspring is sterile. This development is the greatest technical victory of applied biology since 150 years – the time the first professional seed breeders appeared. But it is equally a political failure because by revealing its final objective – namely, the sterilization of living things to create a new source of profit imposed by commercial interests – the Terminator has hastened the collapse of the so-called life sciences.

The separation of production and reproduction is based on Mendel's law of segregation which was rediscovered around 1900. This law says that when a heterozygotic organism – having received different genes or alleles from its parents – is self-fertilized, the next generation will lose half of its heterozygosis. A heterozygotic clone auto-destructs when grown in the farmers' fields, because – the clones being genetically identical – a sort of self-fertilization takes place. To say it in computer language, the genetic software (the capacity to reproduce in a given environment) is destroyed at its first use, obliging the customer thus to buy a fresh copy of the software.

In 1908, Georges Shull, an American biologist (the word 'geneticist' will come in vogue a little later) proposes to apply Le Couteur's method of cloning to corn (for the remaining of the text the word maize is used instead of corn). In his first seminal paper, presented to the American Breeders' Association, he presents this crucial aspect of his invention only discretely. Discretely, because he cannot claim too vocally that the objective of the breeder is in some way to render his invention sterile, that is, unable to breed.

The vocabulary used still plays an essential role in the mystification of the reality here. The technique of cloning proposed by Shull consists of replacing a free variety (open pollinated) which the farmer can freely replant, by proprietary or captive clones. I have been able to show the manipulation that led to the adoption of the false expression, 'hybrid variety,' to describe captive clones. Schull and East – both American geneticists, both specialized in maize – come to a secret agreement in 1910 (revealed in 1942) to impose this revolutionary technique keeping aside personal controversies about priority (who was first).(1)

These influential scientists, professors at the prestigious universities of Harvard and Yale succeed in imposing their theory on the American scene.(2) They also start a periodical 'Genetics' – one of them is the editor for the first ten years.

'Hybrid varieties'? These are not varieties but clones! Whether these clones are hybrid is not pertinent because the method applies as we have seen, whatever the plant's way of reproduction. These clones, extracted from a variety, are by no stretch of the imagination more or less hybrid than any other plant taken from it.

What manipulation of language covers this manipulation of reality?

Ever since G. Shull proposed his concept of heterosis (hypothesis of a favourable effect per se of a cross – for whatever reason) in 1914, the word 'hybrid' has permitted the geneticists to believe –and to make plant breeders believe and everyone else as well – that it is a matter of utilizing unexplained and unexplainable virtues of the hybrid vigour or heterosis in maize, for its improvement, while in actual fact, this clonal hybridization in some sense sterilizes it. This whole issue became an eye sore for the specialists. That was especially the case during the last grand International Symposium dedicated to 'Heterosis in Crops' organised by CIMMYT, (Centro Internacional de Mejoramiento de Maiz y Trigo) the International

Centre for Improvement of Maize and Wheat in Mexico in 1914. The semantic inversion of the reality acquires here a kind of Orwellian perfection.

For Shull and East it is a matter of substituting the real issue of the interclonal variations at the disposal of plant breeders with the prospect of possible improvements by cloning, replacing a scientific question that can be answered with an esoteric question. To that question no answer was available in those days and strangely enough, as we have seen, this question remains unanswerable even today. It is understandable, these interclonal variations are limited and the gains one can obtain by cloning maize are thus also limited. In other words, the method of Shull and East is a method of expropriation. It is the first Terminator, but carefully mystified by genetics. It is of course better to go on talking big about the supposed virtues of heterosis and the origin of hybrid vigour in maize than about the reality of cloning maize, and 'to mistake' expropriation for so-called improvement.

In 1922, in the name of this mysterious heterosis, the Wallaces (Henry Wallace is minister of agriculture in Harding's cabinet. In 1910, Henry Agard Wallace, his son, is in the maize seed business. He will become minister of agriculture under Roosevelt during the New Deal and also his vice president during the war) impose cloning upon the unwilling American seeds breeders. These practical minded technicians had the good sense of not letting themselves be deluded by the scientific esoterism of heterosis. Some of them had, in all good faith, tried out the hybrid method of Shull and East, of course without success. Why destroy the maize plant by successive generations of inbreeding in the hope that an improvement will emerge out of weakened plants? Was that not contrary to the two fundamental principles of selection: 'Breed from the best' and 'Like engenders like'?

Briefly, in 1922, in a Lysenkoist-like coup, the Wallaces succeed in eliminating the breeders who refuse the revelation of heterosis. They now recruit a new corps of breeders to implement a massive coordinated programme for the cloning of maize – a major innovation itself in a greatly decentralized system of agricultural research. All breeders in the Department of Agriculture (in 1936, a 100-head strong workforce) are directly or indirectly students of East. They have received their formation or rather been 'formatted' by East into the mysteries of heterosis.

Let it be said that these state employed clone-breeders do not have much of a choice. The political task assigned to them is to make the hybrids triumph, not to discuss their fundamental genetics or epistemology. Any or all critical scientific reaction and opposition to Henry Cantwell Wallace at the summit of his power would have been suicidal.

The mystification around hybrids becomes impenetrable when, after 15 years of painstaking work, the State clone breeders succeed – thanks to the obstinate and stubborn work of selection – in extracting superior clones from the varieties cultivated by the farmers, varieties which since 1910 were genetically left unchanged as such. The millions of tons of additional maize are due, so one believes, to heterosis. The only thing left to be done is to generalize the technique of cloning now for all plants and animals alike.

Seed saver Anjaneya of Shara Muddana Savaya Krushikara Sangha

The gains that one can hope to obtain from cloning maize are limited, as I have said, though the costs of it are astronomical. Nevertheless, the yields of maize have quadrupled since the war of 1940 and these increments coincide with the introduction of 'hybrid varieties'. Hence the general assumption is that this increase is thus due to the hybridization of maize.

This pre-Galilean way of thinking still prevails. As if our sense observation of the rotation of the sun around the earth would prove that it is actually like that. But the reality is different. The departmental seed breeders have improved maize through selection and have chosen from these improvements clones which are thus improvements themselves. These are then sold by the private sector at sky-high prices.

By 2000, Pioneer – started by the Wallaces with a capital of 7600 dollars – has been sold to Dupont, producers of agro-toxic chemicals, for 10 billion dollars. Each dollar invested in 1926 has multiplied itself a 1,500,000 times. Nobody will deny that the capital invested reproduces and multiplies liberally in the accounts of the seed companies, precisely during the period that plants cannot reproduce and multiply in the farmers' fields.

In the twentieth century, the heterozygotic clones (the hybrid varieties) become of course the ultimate in selection, whether the species are allogamous (with cross fertilization, as in the case of animals) or autogamous (self-fertilised), though with autogamous plants only a very partial success is obtained. Wheat proves to be resistant to hybridisation in spite of 60 years of work. In 1986, a researcher connected to INRA, announces in 'La Recherche' (Research) that 'hybrid wheat is going to be released from the laboratory.'

The Minister of Agriculture finances thereafter a major work programme to assist this difficult delivery. Hybrid wheat still remains in the lab. Happily, for a simple reason which is linked to the way this species multiplies, in other words, the relation between the quantity of seeds used for sowing and the yield obtained.(3) As far as 'hybrid' colza – announced by beat of drum by INRA for its 50th anniversary – is concerned, it is a failure. But the monomania of heterosis made geneticists and seed breeders blind to that determining aspect as they want to succeed in their expropriation affair.

There is another side to the success story of 'hybrid varieties'. To succeed in hybridization – i.e. expropriation which can only bring improvement by tortuous ways – the other methods of improvement must be eliminated. We have just seen how the Wallaces, in the name of heterosis, eliminated the improvement of free open pollinated varieties to the advantage of the captive clones and how huge State investments in their favour have assured their final triumph. The State allowed the self-realisation of the scientific prophesy of heterosis. This dimension, however, completely escapes the geneticists plunged as they are in their a-historical irenic world.

But not everyone is deluded. In 1997, four South African seed breeders working on hybrid wheat let the cat out of the bag during the International Symposium held in Mexico by CIMMYT on 'heterosis – meaning captive clones – in crops':

'The possibility of producing hybrid wheat has generated, like in the case of all other crops, much enthusiasm. In spite of extraordinary successes with other species, we have not been able to sell hybrid wheat for the past 30 years. This unhappy situation is due to a highly successful competitive public research programme which managed to regularly upgrade wheat by conventional breeding procedures and techniques.'(4)

Really, to make captive clones, one needs to turn plants that are naturally allogamous into an autogamous variety and plants that are naturally autogamous into allogamous types! This is a gigantic job, needing decades of work. But to succeed in this, all other methods of improvement – which freely serve the public – must be eliminated. Only then can the accomplishment of the methods of expropriation at the service of private interests be assured. This then is the function of the genetic ideology of heterosis.(5) It is of little importance that the scientists living in their illusions are in someway suffering from 'The Bridge over the River Kwai' syndrome.

Seeds of open pollinated free wheat would cost the equivalent of 15 kg of wheat per ha. plus some costs of processing. The seeds of captive clones cost the equivalent of 15-18 quintals per ha. This is paying a hundred times more for something that could have been obtained much faster. Calculated for the 3.5 million ha. of wheat cultivated in France, this extra cost equals the budget of the INRA, and represents an equal loss for our farmers. What is more, the price of captive clones in France is three times higher than in North America, even if it concerns identical clones. This suggest that the market is still very far from the ideal of 'free and fair competition' ('free and fair competition' refers to the European constitution which was rejected by the French).

The priority of public research should be to provide farmers with free varieties so that they can escape the clutches of the seed business. But the research sponsored by the State has for its objective the creation of 'industrial propriety' within the frame work of a Genoplant born dead. ('Genoplante' is the name of a French state programme to push GMOs).

In short, only dazed geneticists – prisoners of their esoterism and cut off from biology and agronomy – could believe that to improve living beings one is required to prevent them from multiplying in the farmers' fields!

The 21st Century: GMOs or patented chimerical clones

The so-called GMOs are only the repetition of the same mystification. These cultivated GMOs are all identical plants. They are clones. Nothing has changed since the last two centuries.

Nothing has also changed with the tradition of semantic mystification. Living beings are constantly being modified since in each generation they are the result of a unique mixing of genes. The expression 'GMO' has thus no specific meaning. Its sole reason for existence is to circumvent avoid using the original scientific expression, 'functional chimeras'. (A chimera had the same meaning then as 'genetic' because the prevalent scientific doctrine considered that for each gene there corresponded a function, i.e., a protein). The patent on the first genetic manipulation was in fact issued under the name of a 'functional chimera'.

These functional chimeras had but little appeal. The industrialists, however, were able to ensure that the scientists sacrifice precision of wording for the purposes of promotion. In 1999, based on a study costing 2 million French francs, a report of the INRA even proposed the creation of a logo bearing a positive connotation like 'genetically improved, which is a direction for future systematic exploration.' Which consumer would be able to resist such GIOs?

Briefly, by the miraculous handling of vocabulary, a technical jump into the unknown is transformed into a comforting continuity: 'Humanity' (i.e., in reality, the agro-toxic companies and their bio-technicians) continues to do, by more precise and reliable methods, what she has done since the beginning of domestication. Who could quarrel with that?

'This jump into the unknown', however, needs a little explanation.

In 1958, Francis Crick, the co-discoverer of the double structure of the DNA helix, formulated 'the sequential hypothesis' (a protein corresponds to one gene), and the central dogma of molecular biology (the transfer of genetic information is carried uniquely from DNA to protein). 'All transfer of protein versus DNA or protein versus protein will,' as he writes in 1970, 'shake the foundations of molecular biology.' These are mind-blowing simplifications to clarify the genetic code, which the cream of the intelligentsia – from mathematicians, to biologists including military specialists of cryptography – had failed to unravel.

During the sixties, the decoding is done. It is roaring success. DNA becomes the 'molecule of life,' the code of codes.

A few biologists – a little carried away by their enthusiasm – will even declare: 'Show me your genes and I will tell you who you are.' The industrialists are by no means less enthusiastic: life is a meccano. It is sufficient to transfer one gene and one can produce the most complicated molecules or even cure the severest illness.

Briefly, this is the triumph of mechanical reductionism of the Cartesian animal machine. Crick's hypothesis becomes the reality of the living world. It is the replication of the phenomenon of Shull's 'heterosis'. When the 'hybrid varieties' of maize triumph, an ad hoc hypothesis becomes the reality.

In 1999, Ralph Hardy, president of the National Council of Agricultural Bio-technology and ex-director of Life sciences at DuPont explained DNA to the US senate: 'DNA (the top management molecules) determines the formation of RNA (the staff member molecules) and RNA directs the formation of proteins (the worker molecules).'

Definitely, all life is a capitalistic enterprise!

Barry Commoner puts it ironically: 'The Reaganian version of the central dogma is the scientific base according to which every year billions of transgenic plants are cultivated. This with the presumption that a foreign gene will exactly be replicated in each of the billion cellular divisions and that in each of these replicated cells this foreign gene will encode only one protein with the exact amino acid sequence as it encodes in its native organism. Also that in this biological saga – in spite of the presence of the foreign gene – the rest of the natural DNA of the transgenic plant will exactly be replicated without any abnormal changes.'

Hypotheses can be profitable at certain times but that does not make them true. Since the beginning of the 70s, the history of molecular biology can be seen as the synopsis of a painful rebuttal of Crick's hypothesis. Proof of these transfers accumulate without provoking any upheavals yet. The DNA ideology serves the industry and their dynamic but conditioned bio-technicians extremely well.

It is in the year 2000 – with the deciphering of the human genome – that the shock comes. The human species contains 3 to 10 times more proteins than genes! This undermines the very scientific basis of biotechnology, which is nothing but a technicality that transforms the world into a laboratory.

The bio-technicians acknowledge the risks of their chimeras by belittling their dangers. This means to overlook the fact that nobody can escape the fruits of agriculture and its chimerical foodstuffs. It also means that to expose 6 billion people and their descendants without their knowledge to even minimal risks can cause a catastrophe of unprecedented magnitude.

These chimerical clones are patented. The patent legalizes the separation of production (which remains in the hands of the farmers) and the reproduction (which remains the privilege of the agrotoxic cartels). Living beings should stop their rebellious opposition to the agrotoxic seed business.

Thus, in the name of liberalism, the European Directive on 'patenting of biotechnological inventions' puts us back to the 17th and 18th century when kings handed out special privileges to certain merchants. But no king would have dared to give privileges on the reproduction of living beings.

No reasonable person would deliver his near biological future into the hands of the agrotoxic corporations even if they covered themselves under the guise of the 'industries of life sciences.'

This short summary of the history of plant breeding and agricultural genetics shows us that geneticists and seed breeders are prisoners of the illusion of the 'scientific approach.' They are incapable of understanding that objectivity is the result of a process of critical reflection. They constantly fool themselves by fooling us but without being so fooled as to forget the interests that they are serving. Really, should we trust them any longer?

The patented genetic chimeras put irrevocably the capstone on the disastrous historical movement of the industrialization and privatization of life.

For free: The modern agronomy of the future

Disaster: Are not all ecosystems on the brink of collapse? The present day agro-alimentary system rests wholly on cheap oil. If that system had been generalized for the whole planet by 1984, our booming petro-agriculture and industrial petro-food would have exhausted all oil by 1996. That too without counting a single drop of oil for transport and heating.(6) We need 10 fossil calories input to produce one calorie of food. This proves, if proof is still needed, that we are totally on the wrong track. But the period of cheap oil has come to an end.

All around the globe, industrial agriculture is killing the soil and its primal organisms. These make up 80% of all biomass on earth and live in just the top 30 cm of the soil. Our survival as a species depends upon the care, I would say love, that we give to this layer of living 'molecules'.

The violence of industrial agriculture is finishing off this living soil. The degradation of the earth's soils is at present the foremost ecological problem in developed as well as in developing countries.(7) About 2 billion ha. or 15% of all emerged land area has been degraded by intensive agriculture and other human activities.(8) As regards biodiversity, the cloning business puts it in a state of permanent agony.

In quite many parts of France, a kind of hydroponics or 'soil-less' agriculture is practised. Soil-less, because the soil has been reduced to a mere support of inert matter in which all life has been destroyed by the use of fertilizers, pesticides, fungicides, herbicides and what not. Maize – the industrial plant par excellence – covering more than 3 million ha. is an ecological disaster. During the drought of 2003, a few farmers used 10,000 or more cubic meters water per ha. to irrigate a maize crop which yielded something like 100 quintals – 10,000 liters of water to produce one kilo of maize! The shallow and deep water aquifers are poisoned, and to speak of the heritage landscapes in the countryside, they have been devastated as well. Brief, modern scientific agriculture is the very negation of agronomy.

Do we have to continue to 'progress' in this way with the PCCs – Patented Chimerical Clones? Has the agro-industry not already sufficiently spoiled the food we eat? Don't we have enough proofs of its cancers, obesity, asthma and other diseases of civilization that we need to add some more?

In Kenya the maize crop is attacked by an Asiatic stem borer and by Striga, a root parasite. (9)

These can even damage the entire crop. The International Research Center in Insect Physiology and Ecology develops a control measure called push-pull.

The measure consists of cultivating Desmodium, a leguminous plant, in combination with maize. Desmodium repels the borer and at the same time suffocates the Striga. Around the fields, elephant grass (Pennisetum purpureum) a fodder grass is grown. The Asiatic borer repelled by Desmodium is now attracted to this grass. The mucilage produced by the grass kills most of the larva of the borer when they penetrate the stem.

This wonderful scientific work – done with the participation of farmers – assures bountiful and stable maize crops without the need for costly insecticides, herbicides or fertilizers. Livestock population increases and their droppings contribute to the increase of soil fertility. Because of a better income from this higher production, children can be sent to school.

But what a disaster! The well being of the farmers increases but the BIP and the profits decrease. The IRCIPE and its director are accused of holding back the 'Hi-Tech' technologies from the African people. This campaign of denigration succeeds. Kenya has opened its doors to the PCCs. The 'hi-tech', meaning Novartis and Monsanto's Bt maize, their herbicides and fertilizers replaces this wise, free and sustainable agronomic method. (10)

One finds only if one searches. One has to make choices if one has limited resources. The capital investment in the name of public interest and backed by the State and its researchers imposes the most profitable ways at the cost of the very same public interest. They succeed because of their powerful methods which create an irreversible situation.

This accomplished fact is called progress while in fact it is a regression. That is really what is happening under our nose with these PCCs.

To compete in the field of transgenic industrialised agricultural production with the US, Argentina, Brazil or Australia, as certain partisans of PCCs would like to, will lead to perdition. It is the trap, in the name of 'Progress' which means Profit, which the US puts up for the European decision makers.

To say no to PCCs is neither obscurantism nor irrationality nor a return to the past. It is not a turning of one's back to life which some syllogism equals with risks. (11) It is neither an anti-scientific attitude but the demand to go back to the fundamental principles of science. The PCCs – the triumph of reductionist thinking and of out of date science – are obsolete.

Goethe observed that pedantry which rigidly splits up everything and mysticism which amalgates all both lead to the same calamities. Passing beyond this, it is possible and necessary to formulate a science with a human dimension. Agronomy, which works gratis, is such a science. That it disappeared from the scene in a society dominated entirely by profits should not astonish anybody.

References

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1) Jean Pierre Berlan, Researches on Political Economy of a Technological Change: The myths of hybrid maize, These d'Etat, Universite' d'Aix-Marseille II, 1987, 734 pages. Cf. chap. V.

2) It is good to keep a simple fact too often neglected in mind: If the scientists are in their labs, it is not because they 'know' but because they do not know. Since 1910 British geneticists had explained hybrid vigour by the Mendelian dominance principle and proved it experimentally. That is the reason for the secret agreement between American geneticists. The explanation of the British would have sounded the dead knell of their revolutionary invention. It would have brought about free, open pollinated varieties and not captive clones. But genetics was still in its infant shoes. The explanation of the British did not exclude other 'possible' biological or genetic explanations – even the solar spots could have an influence on 'hybrid vigour'. This scientific vagueness allowed the American rivals to impose in the US the idea that hybrid vigour could be explained by a mysterious super-dominance (the superiority in itself of the heterozygote-condition). It could also be explained by Shull's equally mysterious 'heterosis' of 1914 (an advantage, for whatever reason, coupled to crossing). So doing they have turned the attention of the real scientific enquiry – namely, the one of the importance of the interclonal variations of which the breeder can exploit – away towards an esoteric issue without the possibility of an answer. The question of heterosis applied to selection in maize has not lost its pertinence. Moll, Lindsey and Robinson, with their work of 1964 – a work which remains unchallenged – have cut asunder 50 years of controversy by demonstrating that there is no super-dominance for the yield of maize. This clearly indicates that maize breeders, at least those related to the public sector, should have worked with free open pollinated maize varieties rather than with captive clones. Of course captive clones have not disappeared – it is the paper of Moll, Lindsey and Robinson that went to the dusty shelves. For more references on this, see Richard Lewontin and Jean Pierre Berlan. 1989, The Political Economy of Agricultural Research: the Case of Hybrid Corn, in Carroll Ronald C., Vandermeer John H., Rosset Peter M.(eds), Agroecology, McGraw-Hill, Biological Resource Management Series, Chapter 23, p. 613-628.

3) In the US around 1920, the seed rate for maize was 0.08 quintals/ha. which would yield about 20 quintals/ha. Now suppose that 'hybridization' gives a yield increase of 10% or 2 quintals/ha, then one quintal of 'hybrid seeds' sown @ 0.08 q/ha. can cover12.5 ha. Counting an increase of 2 quintals ha. the surplus production on 12.5 ha. would come to 25 quintals in total. Supposing there are no other overhead costs, then the maximum price the farmer is willing to pay for one quintal 'hybrid seeds' cannot be more than the profit obtained from the increase in production by using these 'hybrids'. For the seed producer who has the monopoly over the production of 'hybrid seeds,' the question of pricing policy comes in. He wants to get a maximum share of the profits obtained by the farmer from the 25 quintals surplus production. On the one hand, the cost of producing 'captive' seeds is much more than producing free seeds. On the other hand, the seed producer wants to maximize his profit margin. Even if the production costs of 'hybrid seeds' are 5 to 6 times higher than free varieties (from normal selection), this cost represents only a fraction of the gain in production that the purchase of captive seeds has brought to the farmer. The profit margin for the seed producer is related to the maximum he can squeeze out of the farmer's gain from surplus production.

Now take the case of wheat. It was sown at the rate of 1q/ha. A equivalent per ha. yield increase in the farmers field using 'hybrids' at 10% equals 2 quintals per ha. only. This does not allow to recover the surplus costs of producing 'hybrid seeds'. In order that the 'hybrid seeds' of wheat offer the same profit prospects as in the case of maize, they would have to produce 25 quintals per quintal of seeds used. That

Dr. R.H. Richharia: Adivasi science versus modern science

While he was alive, Dr. R.H. Richharia recounted to Claude Alvares how he discovered that the Adivasis of Chattisgarh region were working with hybrid rice techniques based on male sterile lines. The statement is a mind-opener. Rice scientists today are still struggling with hybrid rice experiments using male sterile lines. How much of the knowledge this country has accumulated has been wasted simply because of the ruinous, mindless system imposed through the agricultural universities!

* * *

We were collecting rice varieties, my favourite pastime, and we stopped near a tribal settlement and I told the tribals what we were looking for. The Mukhia said: 'Sir, every week we have a bazaar here and you can always collect samples from there.' I said: 'Bazaar samples are no good for me. I want pure samples from the cultivator.'

He then said: 'In that case, once a year we have a congregation of rice farmers (Adivasis) and they bring small samples from their fields in the form of earhead and lay them out on the floor, and the religious man (in every village, they have a religious head) comes and with a rod in his hands, goes around all those samples.'

I asked him how many samples there would be. He said: 'About 200-300. Every village has its own system. You can certainly collect those samples in the form of earhead.'

I was impressed that the seeds were kept in the form of earhead, because it had taken me long time and experience to discover that you should keep paddy in the form of earhead, if you do not want it attacked by insects and diseases. The seed lasts for generations if it is preserved in the panicle itself.

I asked him: 'Why do they bring those samples?' He replied: 'The religious man, the headman, will strike his rod on one sample, as if to indicate that this is the sample or variety which will be sown by the cultivators for the coming season, so that they can get more production.'

We, in terms of science, call this production technology, but in their terms I also say that this is one of the methods embedded in their system, of production technology, that this variety will give you more production in terms of the future meteorological conditions.

So the cultivators will all take a few samples from that stock or they will go to the house of the man who brought that sample, he may have one or two quintals of seed, they will purchase a kilo or two and sprinkle that in their field. Because they cannot produce so much seed to cover the hundreds of acres in the village, they have evolved this system. Instead of putting the entire area under that variety, they sprinkle those samples among their own seed, so it will have the same effect. This is their system. So then I asked:

'Could we get the seed of that particular variety the Mukhia struck his rod on?'

They said it would not be available to me.

I instructed one of my field workers: 'You go and attend that function and find out

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would mean a yield increase of 225%. For that 'heterosis,' so dear to geneticists, is not miraculous enough.

These calculations, though simplified, show a little that the rate of multiplication (the relation between the amount of seed grain used for sowing and the yield obtained) of a species plays an important role. Thus 'hybridization' will succeed in cases where the seed multiplication is high, but fail in cases where it is low. 'Heterosis,' if at all, plays only a limited role in this whole affair.

Is this theoretical conclusion supported by practical experience too? Yes, undeniably. Entrapped by the geneticists' snare of 'heterosis,' seed breeders have for 50 years obstinately generalized hybridization. They succeeded with maize, sunflower, sorghum and they may eventually succeed with colza. These are species requiring a small seed rate, about 0.05 quintals per ha. They failed in soya, wheat, and barley which have a seed rate of 0.6 to 1.5 quintals per ha or more. Breeders have especially attempted to hybridize wheat since 1950 but in vain.

To acknowledge this key role of the seed rate is practically impossible because that would eliminate the legitimisation of hybridization – meaning expropriation – by a natural mysterious phenomenon called heterosis. Genetics becomes here an ideology, an apparently rational framework at the service of established interests.

4) Jordaan et al. 1997. in CIMMYT, 'Heterosis in crops,' an international symposium, Mexico, p. 276.

5) By the way, Shull and East, the inventors of the cloning of maize, were very active and fervent promoters of eugenics. East wrote at the beginning of year 1920, an influential book which would prompt the US government to install quotas on emigrants from South Europe to preserve the purity of the Anglo-Saxon race.

6) Pimentel David and Dazhong Wen, 1990. Technological Change in Energy Use in US Agricultural Production, in: Carroll Ronald C., Vandemeer John H. and Peter M. Rosset (eds), Agroecology, McGraw-Hill, Biological Resource management Series, pp. 147-164.

7) United Nations Program for Environment, The Future of the World's Environment 3, De Boeck, 20002,p.92.

8) Agenda 21, Rio Declaration on Development and Environment, United Nations, New York, 1993,ch. 11, para 10.

9) F Koechlin, Organic Research, An African success story, film by Blueridge Institute on the International Centre of research in Insect Physiology and Ecology (ICIPE).

10) According to 'the best guess' of Ch. Benbrook (retired secretary of the Agronomic Section of the National Academy of Sciences of the United States, in a personal correspondence) a field of Bt maize or Bt cotton would produce 10,000 to 100,000 times more Bt insecticide than what a farmer would use even intensively.

11) 'Risk appeared with life, zero risk exists only in a dead world,' Jean Marie Lehn, quoted by the President of the Court of Valence during the hearings of 8 February 2002 (p.4) which condemned 3 participants who uprooted a transgenic maize field in Drome in August 2001, to imprisonment and hard labour. This transgenic field experiment was to test a genetic male sterility in maize in order to avoid the practice of manual castration in the production of hybrid maize seeds. The manual removal of the male maize flower is normally done by students living in the country side. It is for them a source of revenue during holidays. The aim was to increase the profits of the seed companies at the detriment of the rural youth.

(Translated from the French by Bernard, Auroville)

that seed and bring a small quantity with you.' He did that, and I stayed for 4-5 days in the camp nearby. Then when the whole puja was performed, the religious man struck one variety, and then my man went up there and asked for a few earheads. He was stopped. 'You can't take it,' they told him. So he went to the house of the man who had brought the seeds. They would not give them to him there. He went back to the headman and persisted.

Eventually the religious man said: 'If you are so much interested you take it, but it will not give you any seed.'

My assistant of course couldn't understand that: when the seeds are there, one has only to plant them, the plants will come up and produce seed. But the man reminded him: 'All I will say is you will not get any seed from these plants.'

My assistant reported this to me: I thought, this is very peculiar. I sowed the seeds and the plants came up quite nicely. We kept them away from the other rice crop, so that cross fertilization would not take place and when they came to flower, I had to leave for Delhi. When I returned, after a month, we collected the seeds. The headman had said that we would not get any seed but here we were after all with the seed. And then we took a good look at the seeds and they were all empty, chaff. Not one seed. Only husks! We were stunned.

Then I said: 'Do one thing. We will maintain the plant through the stubble. The man had said that we would not get the seed and we have not got the seed, but we have at least the plant and by clonal propagation (a method I had developed) we can multiply it.' So we maintained the plant in the fields for we had to find out why the Adivasis did it. When plants do not give seed, what is the rationale for spreading the seed of plant which will not give you real seed?

Then I learnt that the owner of the stock of that particular seed would not grow a whole crop or raise a whole field with that seed. It was only for spreading, say 20 to 30 seeds for an acre. So the whole village would be covered with the seed in that way. And it became clear. It was only for cross fertilization.

Through our clonal propagation methods we discovered that 50% of these plants were male sterile and 50% of them had a normal flower where the ovary came out, so it could catch the pollen and get fertilized. So that is why in that whole bunch, when we tried, we could not get the seed. These were the receiver flowers. The transmitter flowers were the males from the other stems. So this is like an experiment in which you combine genetic engineering with natural selection. And this is our latest hybrid seed science, but they have already been following it for who knows how long.

At a rice seminar in Hyderabad last year, I said you are talking of hybrid rice. They already know about it, these Adivasis. Hybrid rice means, if you have male and female, just like the horse and ass combination, you get a mule, you exploit the hybrid vigour. In plants also, if you have got the combination of these two, and you get a hybrid, that means where you got 100 seeds earlier, now you get 500: the plant will be vigorous. So you want to produce hybrid seed. There is no technology by which you can produce it, and we are bringing seed from China and IRRI and so on. I objected. I said, 'Don't bring those seeds. You have committed a mistake already by importing Taichung and IR-8. Don't bring more seed.' I said, here is the technique these Adivasis have already been following and I have developed supportive techniques. I said you people have forgotten what your ancestors and what your own people have done. I am a man who combines the past and the present. The present, because I am still living before you, and the past, because so many people have done such beautiful work and they are all dead. I am not dead. If you recollect what your predecessors have done, I think the purpose of increasing production will be served. That is why I say recollect what you have already done and in terms of the rediscovery of India, I say, rediscover the rice plant and the techniques of the Adivasis.

We should discover our own sterile lines and by clonal propagation, we can get any amount of hybrid seed. When I told them this (at Hyderabad) they all got excited. This is similar to Mahatma Gandhi's non-violent technique used against the powerful British government. On the one side there is all this money flowing, there are people with return air tickets; on the other side is a poor man like me who moves with the Adivasis and discovers things. There is a fight between these two. What is the use of importing those strains? And then to retain them, you require another complex system. I say if you have got the male sterile lines, which the Adivasis already have, and you can plant a full hectare. 20 quintals of seed from one seed. You've solved your production problem. It's a one seed revolution.

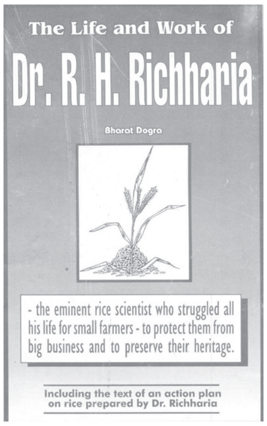
Dr. R.H. Richharia's Life Story

The Life and Work of Dr. R.H. Richharia

By Bharat Dogra

This is a brief biography of our beloved rice scientist, Dr Richharia, which tells you everything you wish to know about him, including his struggle with international agencies that tried, during his time, to take control of rice production and rice research in India. He was simply indefatigable. Even after he was levered out from the Central Rice Research Institute, he turned up at Jabalpur where he successfully maintained 20,000 rice varieties in situ.

Pp.88 (2003) Rs.50



The Life and Work of

Dr. R. H. Richharia

Bharat Dogra

- the eminent rice scientist who struggled all his life for small farmers - to protect them from big business and to preserve their heritage.

Including the text of an action plan on rice prepared by Dr. Richharia

Annadana

Dominique Guillet, a revolutionary visionary, a seed vaidya from France, heads Kokopelli, France whose pivotal conviction is that the only way towards world food security is free access to open pollinated local seeds and the revival of sustainable organic agriculture.

Dominique's visit in 2000 to Auroville, Tamil Nadu, gave impetus to setting up of Annadana - seed and soil savers, a trust, with Stephan Fayon, Sangita Sharma and V. Damodaran as founder trustees.

Since inception, Stephan Fayon, has devoted his energies to research, outreach to marginal farmers, home gardeners, NGOs and State institutes. The emphasis is on natural low cost sustainable agricultural practices, soil regeneration techniques, crop and seed production of open pollinated varieties of vegetables, a few cereals and legumes. There is no compromise whatsoever, on varietal purity of seeds. All seed strains are tested for suitability to agro climatic condition of the area prior to release. For longevity of potency and to ward off possible infection caused by damp and pests, seeds are stored in a solar powered seed bank at Auroville. Across India, 25,000 to 30,000 organic vegetable seed packets have been distributed in the past seven years by Annadana.

Annadana shares its research finding with groups working on similar issues, has networked nationwide to add its voice to demands made for farmers' rights, anti GM campaigns, interacted with State and National Government bodies with appropriate inputs at policy level.

While Sangita Sharma and V. Damodaran handle portfolios suited to their skills, they are supported by a strong team of dedicated technicians and a host of farmers and volunteers who contribute while educating themselves in Annadana's farming techniques and lend support to all activities. The smooth operation of the seed bank, training workshops, research and development, journals and documentation, films and consultancies is handled with much ease because of the collective endeavours of several individuals working with a common vision.

Annadana team at Organic Seeds Convention, Trichy, October 2008

Annadana also conducts trainings, intensive interactive workshops for marginal farmers, NGO's, home gardeners, scientists, agronomists and State institutes on sustainable agriculture techniques from selection of seed to production to dissemination of heritage vegetable seed varieties. As Sangita succinctly puts it, 'For anyone to learn from us, we insist they commit to training from seed to seed, only then are we certain about their keenness to learn and that our efforts are placed in the right direction.'

Initiated in 2007, the Agro Ecological Centre at Kodai Kanal, is proposed to serve as a Knowledge and Research Centre for training and technical know-how in organic cultivation practices.

As of July 2008, a visual seed catalogue offering a wide variety of open pollinated vegetable seeds along with membership categories has been introduced. Each category offers tailor made technical packages to suit farmers, home gardeners, NGOs educational institutions, state institutes, ashrams and private companies. The membership comes with a training package of varied duration, technical inputs, audiovisual demonstrations, reference material and of course seeds.

Their work with government horticulture departments, tsunami-affected areas for cultivation using organic methods have been valued contributions.

Annadana endeavors to equip each State within India, with a state of the art Seed Bank having access to a wide variety of heritage and local high yielding open pollinated varieties of vegetables, legumes and a few cereals, replicable by marginal farmers.

Their vision to ensure food security, the ultimate fortress against malnutrition and erosion of biodiversity is set on the right footing with Sangita Sharma's result oriented, implementable strategies, valuable direction on legal and financial matters from Damodaran, backed by sound science from Stephan.

(Source: Communication with OIP)

Addresses for contact:

Annadana Soil and Seed Savers Network
'Ishana' Gopathi Farms,
Singapura village, Post Vidyaranyapura,
Bangalore – 560097 Karnataka

Annadana Soil and Seed Savers Network',
Vilpatty village, Kumburvayal (P.O.)
Ganeshpuram Road, Kodaikanal,
624104 Tamilnadu

Annadana Seed Bank
Auroville Botanical Gardens,
Auroville, Villupuram Dt., 605101
Tamilnadu
Ph: 0413-2622667

Seed Savers

The Kokepelli Association which has done really extraordinary work concerning the conservation of the heirloom seed varieties of the globe deserves to be in a *Sourcebook* on organic farming.

Kokopelli is a non-profit making organisation set up in 1999, aiming to promote the preservation of biodiversity through the distribution of organic and open-pollinated seeds of heirloom varieties of vegetables and grains.

In 2002 it started the 'Semences sans Frontieres' campaign (Seeds without Frontiers), inviting members to grow seeds in their own garden to be sent to countries in need of good organic seeds like India, Sri Lanka, Niger, Senegal, Burkina Faso, Mexico and Guatemala. In most of these countries they have also helped set up community seed banks and seed networks. In India Kokopelli is associated with Annadaana in Karnataka.

Web: www.kokopelli-seeds.com

Seed Saving and Seed Savers' Resources

http://homepage.eircom.net/~merlyn/seedsaving.html

Excellent link for everything on seeds for seed savers and farmers.

Open Pollinated Seed Varieties at Karnataka's BioCentre

Hulimavu, Bangalore – 560 076, Karnataka.
Ph.:080 26582784, Cell: 09448999207,

Email:jdhbiocentre@gmail.com

Contact: Joint Director of Horticulture, Biotechnology Division.

The Biocentre at Hulimavu with Annadana Foundation, Bangalore has initiated a programme of bio-intensive organic open pollinated vegetable seed and crop production techniques. At present crop evaluation and seed production trials of open pollinated varieties of vegetables namely Tomato-21, Brinjal-9, Capsicum-13, Cucurbits-6 and crop evaluation trials of Gherkin-4, Carrot-4, Beetroot-4, Water melon-7, Musk melon-9 and Broccoli-6 varieties are under progress. This program is being implemented under the National Horticulture Mission. Seed infrastructure facilities are also being established at Biocentre for seed production, extraction, drying, storage, packing and conservation. It is conducting regular training programmes for farmers, extension personnel and organic groups. The seeds produced are meant for distribution to farmers and organic associations as nucleus material for further production and conservation.

Also method of raised beds for growing crops, bed composting, pit composting, sprinkler irrigation, bio pest management, use of eco-friendly methods, organic crop management are being successfully experimented and standardised for transfer of technology.

The Dept. of Horticulture through lab to land programmes is transferring the low cost bio-intensive organic seed / crop production techniques of open pollinated varieties of vegetable to interested farmers' groups in the state.

The advantages of open pollinated seeds may be summed up as follows: Crops breed true to type and adapt well to low input farming using organic principles; Regaining access and control of genetic resources of local/ traditional varieties of seeds; Increase in plant diversity in home gardens, thus helping to eradicate starvation and malnutrition; Strengthen the ancient traditions of growing and exchange of seeds; Encourage sustainable systems of farming; Improve the income generation capacity of farmers; Help in restoring the role of women as major contributors to food production; Add to the food security of the nation. (Source: Gurudutt)

Organic Farming Research Centre and Rice Varieties

Contact: Dr. N Devakumar, Coordinator, OFRC, ZARS, Navile, Shivamogga - 577 204, Karnataka. Ph.: 08182 227747 Cell: 09480037879, Email: ndevakumar@yahoo.com. (Source: Sahaja Samrudha)

The Research Centre has in the past two years regenerated nearly ninety varieties of local paddy primarily in Shimoga and Uttara Kannada districts of Karnataka. These include: ratna churi, mysore mallige, aloor sanna, rajbhog, kanada tumba, kichdi samba, dehali samba, kymie, hmt, anandi, chinna pani, marabatta, edikatti, zeeragi sada, rajmuri, zeerage sanna, holada tumba, newara, etc.

Some varieties are rain fed while others grow only when submerged in water. Farmers from several areas have now begun demanding distribution of native strains, particularly in areas where flooding is commonplace and water-resilient varieties are required for sowing.

Farmers from Hoskote in Rural Bangalore too have started experimenting with some of these varieties.

Some, such as red rice were famous for their flavour and taste, and were traditionally used for preparing sweet dishes. These traditional varieties are location-specific. For instance, some can be grown only in hilly areas while others can be grown in the plains.

Most farmers have known about these varieties from a long time, but there has never been any systematic effort undertaken to preserve and promote them. Moreover, high output of hybrid varieties promoted by the official agencies lured farmers away from cultivating traditional strains.

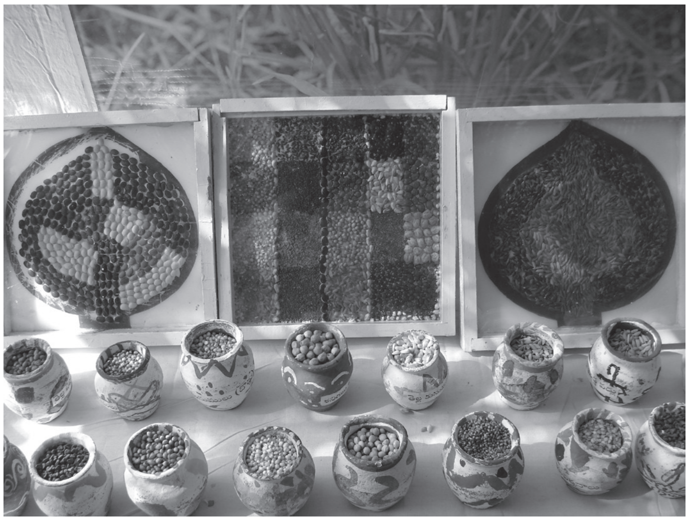
The reclaimed varieties are distributed free of cost by the centre to interested farmers. Farmer NGOs such as Sahaja Samruddha and Krishi Prayog Parivartan have actively assisted in distributing these seeds widely.

OFRC has been established to validate the popular organic farming practices in use across Karnataka.

With the coming into effect of the Karnataka State Policy on Organic Farming, the need to evolve new methods suitable to different agro climatic zones and socio economic conditions prevalent in the state was felt. OFRC was established for conducting exclusive validation and enhancement research on organic farming. So far, the centre has undertaken studies on beejamrutha, jeevamrutha, panchagavya, and on sand urea (sand saturated with animal urine and dried in the shade).

OFRC documents existing farming practices, traditional knowledge and biodiversity related to organic methods. It validates (in-farm) all popular non chemical methods of agriculture being presently practiced by farmers across Karnataka. It promotes integrated farming systems suitable for drylands, irrigated hilly and coastal regions.

Deccan Development Society:The Mobile Biodiversity Festival



Every year, on January 14, Makar Sankranti, DDS commences its month long seed yatra through dozens of villages showcasing its awesome collection of millet seeds. The gaily decorated bullock carts and bullocks are welcomed in all the villages they pass.

The decline of the millet culture has been a loss to the world's gene pools of such crops. As major international research stations have concentrated on the big crops (rice, wheat and maize), the millets have been left by the wayside. Some varieties have disappeared; others are in danger of vanishing. So will the cultures dependent on them. As the world gets more scientific, it gets more uniform in what it eats and by the same measure less tasty.

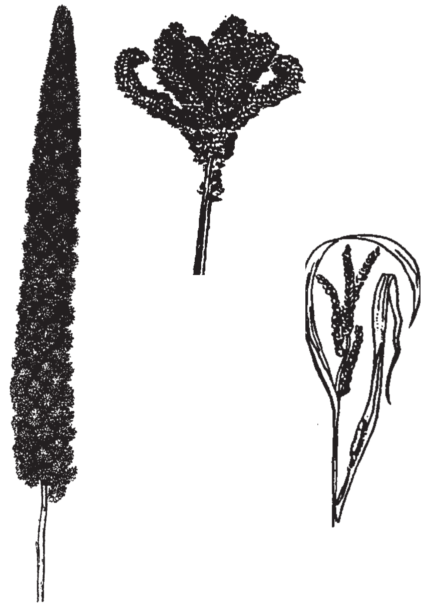
A decade the ago the farmers of DDS and affiliate Women Farmer Sangams started celebrating the return of the Sun on January 14, Makara Sankranti Day, with festivities marking the return of their cherished local seeds into active farming systems. This event has now come a major, colourful and unique Biodiversity Festival.

The Festival not only symbolises the celebration of the agrobiodiversity of the region but also the way the poor and the women have retrieved their dignity and autonomy. Into its tenth year now, the festival has become an occasion to celebrate their food systems, seed sovereignty and the rich agro-bio-diversity on their farms. It is a time to celebrate their identity as farmers even as others of their kind are losing hope and hold on their independence

Since 1999, the annual mobile Biodiversity Festival has made its presence felt as a unique opportunity for dialoguing with the local community about ecologically sustainable agriculture, community seed sovereignty, the idea of local production, local consumption and local markets.

Continuing in tradition, the Biodiversity Festival travels over days. The colourful caravans meander through villages heralding the joys of food sovereignty. This year's (2009) decadal celebration rolled across 55 villages in Medak District in a month long expedition of celebrations and good will exchange with song, dance, cooking of traditional fare, seed exhibition and seed display.

The procession of bullock carts, decorated with sheaves of grain, flower garlands and colourful fabrics is an overpowering image of bountiful crops and food-sovereign villages.



The festival attracts a range of visitors - large farmer groups from Southern Africa to scholars, writers and scientists - who participate in endorsement and solidarity of ecological farming practices.

The National Biodiversity Action Plan of India has strongly endorsed these biodiversity festivals as a tool for the promotion of agri-biodiversity alongside recommending that their Community Gene Bank model become a national model.

If you are around Hyderabad around January 14, stop by at DDS and join the festival. It is a memorable experience not to be seen in any other part of India.

Towards enlarging the scope of its work, DDS started the All India Millet Network linking members from all major millet producing states of India like Uttarakhand, Rajasthan, Maharashtra, Madhya Pradesh, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu and Karnataka.

Grown in over 100 million hectares of the country, millets can potentially produce more than 100 million tonnes, almost 50% of the country's food production. Therefore they have the ability to ensure food and fodder security, health and nutritional security, livelihood and ecological security.

One of the networks' mandates is to demand that the government accord millets a rightful place in its food and agriculture policies and plans and introduce it in the Public Distribution System of the nation.

Pebble Garden: A Garden for Everyone

Aurobrindavan, Auroville 605 101, Tamil Nadu. Ph.: 0413-2677792, Email: pebblegardenforest@gmail.com

Contact: Bernard and Deepika

It is possible to count the number of seeds in an apple but you cannot count the number of apples in one seed. – An old proverb

'A Garden for Everyone' is a seed conservation and exchange initiative for Home Gardeners.

Pebble Garden has grown out of 12 years of regeneration work on 7 acres of lateritic wasteland in Auroville, Tamil Nadu. The land is severely eroded and forms part of nearly 8000 ha of wasteland marked in many places by deep gullies caused by extreme erosion.

Deepika Kundaji

The larger work

Our Land Regeneration work encompasses – revival of the ancient forest species; protecting its natural fauna; creating life-nurturing water bodies; building soil where there is none - from organic inputs grown on the site, gathered from the neighbourhood and home; setting up a garden and fruit tree area with a large diversity of plants for all needs; conserving; sharing seeds of hardy varieties for home gardens suited to poor soil conditions and creative interactions with like-hearted people.

'A Garden for Everyone' is an inseparable part of their larger work of wasteland restoration.

It is an effort to conserve and spread non-commercial plant varieties that have done well on this wasteland and are ideal for home gardens.

The land

The entire plot of land is characterised by a total absence of topsoil. Its surface is a dense and compact mass of pebbles, lateritic chunks in red or yellow clay, waterlogged in the rainy months, rock hard and heavily compacted.

* Considering that cultivated plants, especially vegetables need a balanced soil, rich in humus and well drained, many have doubted if such land can support even a Forest, leave alone a Garden.

* Almost half of India's cultivable landmass is seriously degraded. Our small experiment has convinced us that the productive potential of wastelands can be restored with simple methods, local skills, on-site inputs and traditional plant varieties. The only 'high' technology needed is love for the land.

How the garden was built

The intense process of soil building for the garden area started with protecting the plot, followed by establishing pioneers or'start-up' species. (A.coleii, D. viscose, S. hamata). Every bit of the established pioneer vegetation was recycled in various ways, together with silt collected from ponds, to create built-up layered beds, heaps and circles in the garden plots. The process of soil building still continues, with creative modifications every season. Apart from using biomass grown on the site, we manually gather leaves and organic matter from the neighbourhood and make full use of home resources (ash, urine, grey water, kitchen waste). We hardly use cattle manure, no deep digging, no purchased compost, no bought seeds.

Today 'pebblegarden', with 19 built up beds of 11m, is home to more than 80 hardy varieties of vegetables, herbs, flowers, cover crops, root crops, medicinal plants – that grow and flourish in spite of the difficult terrain on regenerated soil.

Why we need to grow a garden, save our seeds.

The varieties we grow and share are primarily selected for their robust nature. Most of them are endangered, rarely grown, not seen in markets, nor are their seeds easily available. They have qualities that home growers and users value, such as taste and flavour, nutritive value, interesting and diverse shapes, colours and sizes, staggered fruit production, keeping quality and long producing duration. Market varieties on the other hand are bred/selected with commercial priorities such as uniform 'looks' over food value, easy transportability above taste and texture, good response to heavy chemicals, single phase harvest;¬ qualities of no use to home growers and they do not produce tasty, healthy and nutritious food.

At pebblegarden we grow a small seed collection every year using simple methods to maintain varietal purity. The seeds are stored in a corner of our kitchen shelf, in simple, zero-cost paper packets and paper boxes.

Food, in our modern world, with all the heavy chemical and water inputs, not only fails to nourish us, but ruins the environment beyond measure. Not to mention the peril that lurks behind transgenic crops and the uneasy fact that food is crossing oceans and continents before it reaches consumers.

What can we, as individuals, do?

A home garden is a simple response, well within the reach of many of us, to insecurities arising from this strange food situation. Moreover, any ardent home gardener, or even a sincere novice, however tiny the garden, can be an active seed steward and conserve endangered plant varieties handed down to us by nature and tradition.

We offer you our seeds and hope that they will urge you to start your garden right away.

These seeds also carry a dream – that one day there will be 'a garden for everyone' on this planet.

Bernard and Deepika, give their complete effort to this long-term work. They sometimes receive student volunteers, co-learners and only occasionally take hired help and maintain themselves and the land by donations from individuals, in both cash and kind.

The Green Foundation

Vanaja Ramprasad

No. 30, Surya, (P O Box.7651), IVth Main,
19th Cross, N. S. Palya, BTM 2nd Stage,
Bangalore 560 076, Karnataka. Phone:
+080-26784509, 080-26783858 (R) Telefax: 080 26680995, Cell: 09449861040
Email: green@greenfoundation.org.in /
earthbuddy@gmail.com, Website: www.greenconserve.com

(Contact Person: Vanaja Ramprasad)

GREEN Foundation is a grass-roots organization working for the last eleven years, among small and marginal farmers, in the semi-arid regions of southern India. The main goal of the organization is to conserve, promote, revive and develop agro-biodiversity, genetic and cultural diversity, hand in hand with local rural communities. In recent years it has broadened its scope from the conservation of seed diversity to the enhancement of food security and the promotion of sustainable rural livelihoods. To this end, the Foundation has undertaken activities to document and revive indigenous agricultural knowledge, practices and rituals, study the medicinal value of plants, and conduct experiments on sustainable alternatives to modern agriculture.

The Foundation's activities were earlier only in Thally, Dharmapuri district of Tamil Nadu and the neighbouring Kanakpura district in Karnataka, but now its network has spread to other parts of Karnataka and Tamil Nadu and covers 291 villages presently.

On-farm conservation

The Conservation Centre situated at Thally which is the nerve centre of the GREEN Foundation, focuses on experiments with respect to crop monitoring, evaluation, characterization, companion planting, vegetable seed production, seed treatment, bio-pesticide and compost methods. The seeds are multiplied, monitored and evaluated. The Conservation Centre is a model for training in germplasm maintenance and sustainable practices for many farmers and NGOs. It is a supplementary station for the distribution of tested germplasm and tree saplings for large-scale multiplication and distribution to the neighbouring villages.

Farmer to farmer exchanges are encouraged through seed fairs and yatras that are held annually after harvest. These exchanges have helped locate genetic wealth, recognize custodians of diversity, unearth indigenous knowledge and enhance farmers' participation in the Foundation's programmes.

Workshops on various issues pertaining to agriculture, biodiversity conservation and gender sensitivity, such as sustaining rural livelihoods, crop improvement and a seed savers conference, have been conducted by the Foundation

Training programmes are conducted at village level for sangha members to enhance their knowledge of indigenous agricultural practices. Training is also given on topics such as soil and water conservation, compost making, germination tests, kitchen gardening, nursery raising, pest management, apiculture, agro-forestry and seed storage, treatment, selection and processing. Women are being encouraged to attend these programmes and to take independent initiatives in farming practices.

Farmers associated with the GREEN Foundation are growing crops organically that are chemical free and have a high nutritional value.

The range of farmer beneficiaries has grown from five in 1994 to over two thousand till date.

Community seed banks

To encourage region specific agricultural diversity, 42 community seed banks have been established through women's groups, in various parts of Karnataka and Tamil Nadu.

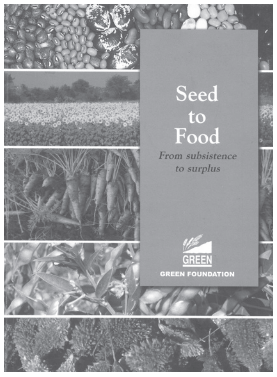
Hidden Harvests

Seed Quest

Seed to Food

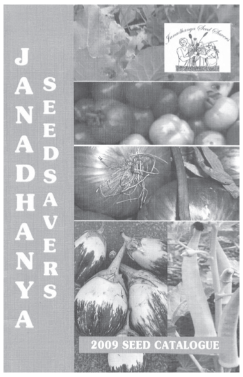
Investing in Indigenous Knowledge

Banking on Seeds



These book capture various facets of a decade of work on seed conservation at the Green Foundation under the inspiration and leadership of Vanaja Ramprasad.

Janadhanya Seed Savers



The Green Foundation recently supported the set up of the Janadhanya Seed Savers (registered as a Society). These traditional seed managers are from Kanakpura Taluka engaged in organic farming. They grow diverse crops including millets, rice, vegetables and also fodder crops.

The Seed Savers have drawn up a scheme through which you can get open pollinated, organic seeds. They also have a beautiful seed catalogue. Write to them at the Green Foundation address.

The Seed Keepers of Sirsi

My interest in preserving seeds began in 1998 in Pune when as a gardener in an apartment I found I did not have easy access to organic, open pollinated native seed varieties that were our heritage and to which we had every right.

On moving to Sirsi, I noticed that the home gardeners there had so many different things growing in their gardens that it was worth preserving and documenting them in detail.

At that time, in 2001, the National Biodiversity Strategy and Action Plan (NBSAP) being coordinated by Kalpavriksh was in progress. I wrote a note for the Regional Uttara Kannada District Plan (Karnataka) highlighting the importance of home gardens as complex, extremely productive repositories of biodiversity and the people (mostly women) who tended them as keepers of this very old practice.

Vanastree's first collection of seeds came from some home gardeners in Neernalli village, Sirsi. As a start, Domninique Guillet of the Kokopelli Foundation also sent a lot of seeds from Auroville. The work of Deccan Development Society, Green Foundation and Deepika Kundaji was inspiring.

At Vanastree, the work has been progressing rather organically. Since there was no particular formula, we have had to try and test all approaches and modify things according to the local situation. With Vanastree, we have succeeded in convincing folks that home gardens are as important as crop fields and that it is worth conserving seeds that come out of home gardens.

We have documented about 120 varieties of vegetables and tubers in the home gardens of the Malnad. Some of the regional specialities are the maggay kai (malnad variety of cucumber), the fantastic diversity of brinjal (egg plant), the varieties of colocasia (arbi), the tiny gubbi benday (sparrow lady's finger), the malabar spinach and the pumpkin diversity. There are also special bean varieties.

Our seed collective has mostly women seed conservers. My observation is that women tend to be better at seed selection and conservation, especially of vegetable and flower seeds. They also play an active role in the orchard and paddy work and in seed selection, although men seem more dominant.

Some of the things worth keeping in mind while attempting such endeavours are:

1) Try and get help with getting started.

2) There is material on seed saving and storage - read up or learn. It will be systematic if you do, otherwise you find yourself swamped.

3) Have local partners participate to the extent possible

4) Don't aspire to have a seed bank unless you have the resources and assistance. This is a full time job! It's far better to have a small collection centrally and maintain a regional seed bank which is the landscape and the communities.

5) Keep things small scale, don't spread out too thin.

(Source: Sunita Rao, founder Vanastree, in communication with OIP)

Dadaji Ramaji Khobragade: The Case of HMT Rice

At Post Nanded, Naghbid Taluka, Chandipur District, Maharashtra.

In 1983 Dadaji Ramaji, a small landholding farmer from Nanded, a small forest village, noticed three yellow seeded paddy spikes commonly called as 'lomb' in his 1.12 acres paddy field, planted with the Patel 3 variety of paddy. He picked these three spikes, brought them home and stored them in a plastic bag (those were the days when plastic bags were treasured possessions and recycled for repeated use). The next year he sowed the seeds of this yellow variety separately in the middle of his field amid a fence of thorny bushes to protect it from pigs and other wild life. Observing the high yield of this variety, he continued with the exercise of cultivating in isolation, fortified with a fence for five plant geenrations. On cooking he found the rice to be tastier than the Patel variety. High yield was established when in 1988 he sowed 4 kg of paddy in 100 sq ft and obtained 400-450 kgs of rice. The seeds then spread to local farmers in the area. In 1990, a trader in Talodi who had received this variety for sale had happened to get himself a new HMT wrist watch, which then was a prize possession. He promptly named the seed 'HMT' variety and the name stuck.

Though the paddy research centre whom he approached refused to recognize his farm research, the Panchayat of Nanded in 1993 passed a resolution declaring him a Paddy Seed Producer. He has since received much recognition.

It may be pertinent to note that in 1994, the Sindewahi Rice Station, a part of Punjabrao Krishi Vidyapith took five kilograms of seeds of the new variety under the pretext of experimenting and in 1998 released a new variety named PKV HMT. They claimed that Khobragade's variety was 'impure' and that they purified the local HMT and released it under its new avatar called PKV HMT. To Khobragade there is no apparent difference between his and theirs.

Many social activists and NGOs have voiced their opinion that the university has not been fair to Khobragade. The HMT variety has been well accepted by the farmers of the Vidharbha region in Maharashtra and is extensively cultivated in Andhra Pradesh, Gujarat, Chattisgarh, Madhya Pradesh etc.

He picked up the practice and art of seed selection from his father at a very young age. On the last count, he had isolated and bred eight varieties namely Chanaur, Nanded 92, Nanded Hira, DRK (a mildly scented variety named after himself), Vijay Nanded, Dipak Ratna, HMT and an unnamed variety all with an average yield of 15-16 quintals per acre. Of these, Vijay Nanded and HMT with an average yield of 25 and 20 bags/acre respectively, have been commercially successful.

Inspite of these innovations, forced by circumstance, he continues to live a frugal existence supporting an extended family of six members.

(Reference: www.nif.org and World Wide Web)

Seed Conservationists

George Antony

Eco-Friendly Farmers Forum (EFFF), Earathumuttathukunnel, Poovarany.P.O., Taluk: Meenachil, Kottayam Dist - 686577, Kerala. Ph. 04822 226041, Cell: 09447808417

George Antony's interest in farming began in childhood while living and working alongside his parents on the family farm. An acknowledged expert in seed preservation techniques today, the various indigenous and ingenious skills are a consequence of his deep and active involvement with the Participatory Technology Development Programme of INFACT, The Eco Friendly Farmers Forum, Organic Spice Growers Forum, Karshakavedi, INAG, OFAI and others, but above all, from working alongside his father on the family farm since his childhood days.

Antony grows rubber, coconut, arecanut, mango, jackfruit, guava, coffee, pineapple, pepper, nutmeg, passion fruit, papaya, tapioca, tuber crops, banana, ginger, vanilla, turmeric, variety of medicinal plants and vegetables on his five acre farm.

The two cows he keeps supply part of the raw material for the manure prepared on the farm, while the rest is purchased from outside.

Some of his prize seed collections are: Five varieties of amranthus, three of cow pea, two each of brinjal and lady's finger, and cucumber, local brinjal, winged beans, sword beans, bitter-gourd, various spice and tubers.

And his favorites are: Elephant tusk lady's finger, one meter long cow pea, local cow pea, blue brinjal and cucumbers.

He is the convener of Eco-Friend PGS group.

Dr. Mohan G.S.

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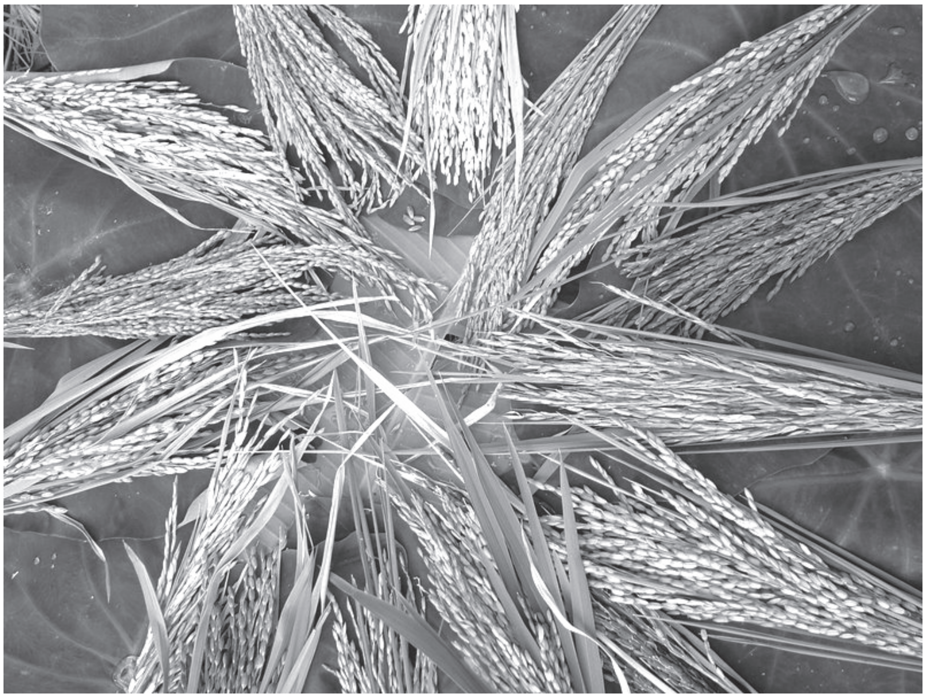
Ponnampet 571216
Kodagu, Karnataka
Cell: 09902293468
email: mohanudd@rediffmail.com & mohangs2007@gmail.com

Conserves over 200 varieties of paddy



Boregowda

Shivalli, Taluka and District Mandya, Karnataka. Cell: 09242459437

Boregowda proudly claims that till date he has not visited the Agriculture Department for any kind of assistance nor has he used fertilisers in his fields. He grows about 26 local varieties of paddy. Using organic practices he has successfully grown burma, tanu, mysore mallige, posa basumathi, navara, rajamudi, jaya, mukkannu sanna, malagudi sanna, kanada tumba, kempukaru, karidundana, dehradoon basumathi, gandhasale, jeerige sanna, bangara sanna, raja kayame, chinna ponni, kempudadi, massori, naga, raichur sanna, gowri sanna, rathna choodi, rajabhoga, moradda varieties.

According to him naati (local) varieties are better than hybrid ones both for health and for seed. The paddy he grows on his 12 acre farm has a cultivation period of one-and-a-half to three months.

The practice of yoga made Boregowda adopt organic farming. He says, 'According to yoga, food and health are correlated. I cannot mix poison with food by using fertilisers, hence, I have used only "Jeev amrutha" since 2003-04.'

(Source: U M Mahesh)

Vasudanre Jaivika Krushikara Seva Sangha

Hunnena halli, Post Beechana halli, Taluka Holenarasipur, Dist. Hassan, Karnataka.

Ph: 0817 5272525 Cell: 09449462397

Contact: Hoysala Appaji

Hoysala Appaji of VJKSS conserves rajmudi, ganda sale, rathna choodi, bangara sanna ,rajkyme, rajboga, malgudi sanna and other rice varieties. These were the preferred varieties of the Maharajas of Mysore and today are very popular and are the best selling varieties in organic outlets.

(Source: Krishna Prasad)

Hosmani

Karnataka, Cell: 09448130647

He conserves different rice varieties of the Dharwad region: ambemore, kari gajivili, salem sanna, chinnnaponni, akkala sale, mugad basumathi and others.

(Source: Krishna Prasad)

Traditional Agricultural Producers' Association and Seed Exchange Network

1/109 Raja Street, Valaiyambattu Village, Chengam, Thiruvannamalai District - 606 701, Tamil Nadu Ph.: 04175 235041, Cell: 09443686888, Email: easternghats@yahoo.com

(Contact persons: K Venkatachalam and Dr.V.Arivudai Nambi).

K.Venkatachalam and Dr.V.Arivudai Nambi have established a network of farmers in Tamil Nadu who are cultivating traditional varieties of paddy. The coordinating unit of the network is located in Valaiyambattu village. The objectives of the network are:

(i) To collect, multiply and distribute local and traditional varieties of paddy.

(ii) To aid farmers and NGOs who are cultivating local and traditional varieties of various crops.

(iii) To provide training to farmers and NGOs on techniques for reducing the cost of cultivation, using locally available natural resources, while at the same time working on ways and means of increasing their production.

(iv) To explore and devise methods to get remunerative prices for organically produced local and traditional varieties.

(v) To raise awareness among urbanities and the elite about the importance of organic farming and the need for continued use of traditional crop varieties.

The work of the Network is carried out under the aegis of the Save the Eastern Ghats Organisation (SEGO), a non-profit NGO committed to the cause of the environment. The Network has identified farmers cultivating traditional paddy varieties in Chengam Taluk and the Javadi Hills. It encourages them to cultivate, use and market the same. It also provides seeds and technical inputs on compost application, pest control etc. The network now circulates among its members more than 75 traditional paddy varieties that once used to be widely cultivated but whose use had declined over the years. This ensures that these varieties are now kept alive and the costs of maintenance are spread over many farmers, thus generating a self reliant sustainable system.

It is significant to note that the work of the network has been pitted against many odds. Research carried out by the network indicates some significant trends in agriculture that act counter productive to local seeds and varieties. Firstly, the social conditions under which the local varieties were raised in the past, no longer hold true. There is large scale out-migration of men and women from Chengam region to Bangalore and Tirupur, in search of better remunerative seasonal work. This out migration has led to selective mechanisation of agriculture with tractors, threshers and combine harvesters, which are better suited to high yielding varieties. Secondly, local varieties of paddy do not find a ready market since consumers do not know of them and therefore there is no demand. Thirdly, consumer taste preference has changed to a significant extent, such that these varieties are no more wanted nor hold special significance for urbanities. Finally, the hidden subsidies available to modern agriculture are not available to local and traditional crops. Hence, the present day conditions do not favour growth of local crop varieties.

Mr.Venkatachalam and Dr.Nambi observed that though the yield potential of traditional paddy varieties is lower than modern varieties, the external inputs required for their cultivation is low, they have greater resistance to pests and diseases and are suitable to adverse conditions like saline soil. He therefore felt that if a premium price can be established for organically grown produce, it would act as an incentive to farmers to cultivate traditional varieties. Presently, the traditional paddy varieties are grown either by big farmers in small plots, out of preference for taste or by farmers with land not suitable for other paddy varieties. The Network is therefore making efforts on priority, to obtain a premium price for organically grown produce of traditional varieties of crops.

(Source: Communication with OIP)

Dr. N.K. Shipani Mandsour

Cell: 09425105100

Shipani research farm in collaboration with ICAR has been breeding indigenous seeds. Dr. Shipani has a collection of over 5000 varieties of wheat.

(Source: Bhartendu Prakash)

M.K.Shankara Guru

Madrahalli, Post Kannahalli, Taluka T. Narasipura, District Mysore, Karnataka. Ph.: 08227 272267 Cell: 09900658921

Shri. M K Shankar Guru, 61, is from a family of farmers who have more than 200 years of experience in paddy cultivation. He started searching for traditional seeds in 1992. A labourer from Tamil Nadu gave him 1kg of selam sanna seed. Shankar Guru started conserving this under organic practices. Gradually other organic farmers started taking seeds from him and now selam sanna is very popular in Tamil Nadu. It yields 25 to 30 quintals per acre under organic cultivation.

He has also developed the variety NMS2 (Narsipura Madarahalli Shankar) which is named after him. He submitted this variety to the Bangalore University for observation and for recording its biological characteristics. He now distributes the seed himself and has received favourable feedback from the farmers.

Among his prize collections are: NMS2 - brick red in colour, gives good quality fodder, is pest and disease resistant; Ratna chudi, a medicinal rice variety consumed by pregnant women; Jeeraga sanna, a scented variety. (Source: Krishna Prasad)

Sharana Muddana Savayva Krushikara Sangha

Kumbaloor, Taluka Harihar, Dist. Davanagere, Karnataka. Cell: 09972088929

Anjaneya A N is the founder of Sharana Muddanna Savayava Krishikara Balaga in Harihar. He is conserving 28 different rice varieties that include local varieties like malgudi sanna, ratna chudi, gandha sale, salem sanna,gowri sanna and chinniponni.

(Source: Krishna Prasad)

Hulikadu Savayava Krushikara Balaga

Byloor, Post Vadeyrapalya, Taluka Kollegal, Dist.Chamarajnagar, Karnataka. Cell: 09449229141

The Hulikadu savayava krushikara Balaga farmers conserve many varities of finger millet(ragi) like hasirubunduga ,beli bunduga, pichcha kaddi ragi, kona kombina ragi,jagloor ragi, hainu ragi, yadagu ragi,majjige ragi,Jenu bunduga, halu ragi and others. (Source: Krishna Prasad)

The Karad Seed Jatra

यशवंत
कृषि विकास संस्था, कराड
सुस्वागतम्

Yashwant Krushi Vikas Sanstha

Taluka Karad, Satara District, Maharashtra.
Cell: 09890071012

Contact: Ashokrao Thorat

The Yeshwant Krushi Vikas Sanstha in the last week of May each year takes the lead in organising fares and programmes related to agricultural activities. The event is looked forward to by the agricultural community of Karad and surrounding areas. The event attracts enthusiastic participation by organic farmers from the neighbouring districts of Pune, Sangli, Kolhapur, Satara and Belgaum.

The mela each year offers organic farmers a platform to showcase the diversity in crop produce of vegetables, fruits as also seed varieties in rice, jawar, pulses, ground nut, soyabean, cowpea, black gram, red gram, millets etc etc. For the purpose of public education, organic farmers and doctors give talks on chemical free food and farming.

The festive ambiance attracts farmers and the general public to its organic counters in large numbers. The event is looked forward to as an opportunity for networking, farm talk, direct trade and contact building.

As a treat visitors get to indulge in popular food snacks, chaats and juices prepared from fully organic ingredients.

(Source: Jayant Barve)

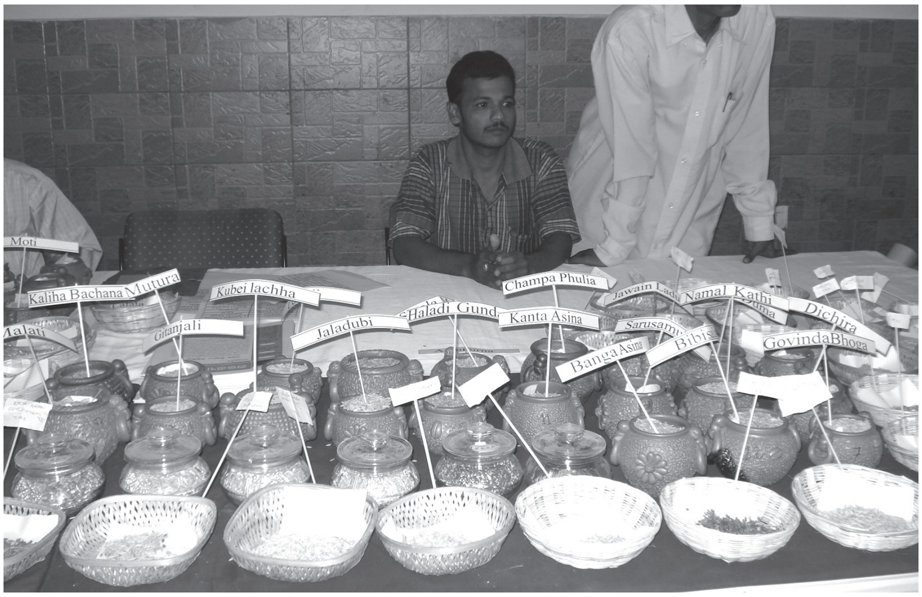
Organic Seed Displays

Organic seed displays (like the one put up by Orissa's seed groups below) are now fairly common at organic farmers' meetings.

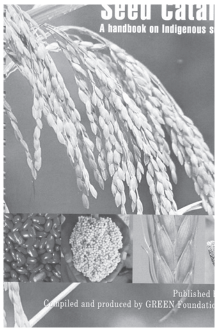
Since one of the conditions of organic certification requires farmers to use chemically untreated seed, farmers are always on the lookout for good native seeds.

Apparently, these are still around. Any seed that you want, someone somewhere has it and is willing to share it with you.

In a couple of years, organic farmers should be able to get guaranteed organically grown seeds from cereals to vegetables without difficulty.


Moti
Kaliha Bachana
Mutura
Kubei lachha
Malati
Gitanjali
Jaladubi
Haladi Gundi
Champa Phulia
Kanta Asima
Jawain Cadi
Namal Kathi
Dichira
Sarusama
Banga Asima
Bibisa
GovindaBhoga

Organic Seed Catalogue


Seed Catal
A handbook on Indigenous s
Published
Compiled and produced by GREEN Foundation

This is the first catalogue of indigenous and organic seed varieties published by OFAI. The work of compilation and production was done by Green Foundation. The catalogue is a result of an organic seed producers' workshop held near Bangalore in August '07. The catalogue is exclusively for members of OFAI.

The first edition will soon be revised to include more collections and more persons dealing with indigenous varieties.

In the meanwhile, seed conservationists are getting their collections organised for more widespread distribution following growing interest in getting such seeds.

Top of the seed distributors is the Annadana network which distributes organic vegetable seeds. The Green Foundation also has its own catalogue. Smaller but equally awesome initiatives like those of Deepika Kundaji inspire others to start similar efforts.

God and nature bless them all.

After being banished by India's planners from an active role in India's agriculture, the cow, like Sita, has been returned to her rightful place in the kingdom. Our indigenous breeds of cattle are gradually returning to their sheds from the slaughterhouses to which they were being despatched by official decree. No thanks, however, due to officialdom.

The credit for this major re-orientation to re-draft the Indian cow goes largely to the organic farmer, particularly to the inventors of *panchagayva*, *amrut pani* and a host of other new and old sources of nutrition for the soil and human beings as well.

Credit also goes to India's spiritual leaders, especially the heads of religious maths including His Holiness Jagadguru Shankaracharya Sri Sri Raghaveshwara Bharathi Swamiji of Shimoga in Karnataka, Baba Ramdev, and several others.

For those who do not know, the Indian planning process for the past fifty years was based on the elimination of the indigenous breeds and their progeny from Indian agriculture and transport and their substitution with imported nutrients in the form of chemical fertilizers, tractors and motorized transport. It is not commonly known that slaughter house projects were set up to rid states of indigenous cattle, so that they could be (foolishly) replaced by exotic Holstein, Jersey and Danish breeds. This awesome programme of mass destruction of our indigenous genetic resources was masterminded by the National Dairy Development Board.

Despite a host of laws enacted by various states prohibiting cattle slaughter, the killing of animals in modernized and un-modernized slaughter houses has carried on relentlessly.

Panchagavya and *amrut pani* (to name just a few) have brought farmers who traded their animals to butchers for cash back to their senses. Now we wait to see when the bureaucrats in the various government agriculture and animal husbandry departments regain theirs.

The rediscovery of sources of soil fertility from the cow will lead, we hope, to the decline and eventual closure of plants producing chemical fertilizers. That revolution will help restore the soil and bring it back to the high productivities associated with India's agriculture (discussed in chapter two).

We hope as well that it will lead to the closure of most of the country's abattoirs (slaughterhouses) as well.

Chapter Eight

GoMata Returns

Outcrossing India's Cow Genes

After you read this account of what various official agencies did to India's famous cattle breeds, you may not know whether to laugh or to cry. But it does appear that the policies in relation to animal 'husbandry' have been designed by people with 100% colonially enslaved mind-sets and/or partially damaged brains.

In brief: India developed over centuries (largely through the community of nomadic pastoralists) some 70 outstanding breeds of cattle, some closely adapted to specific bioregions and therefore useful to agricultural operations in those tracts. Recognising the rigorous quality of these animals, Europeans, Americans, South Americans and Africans came to India to purchase and import these breeds for their own foundation stocks. This transfer of Indian cow species wealth went on for a hundred years.

Despite recognition of this situation, and instead of using the better breeds to the country's advantage, the National Dairy Development board (NDDB) set up by the Government of India to raise milk production in the country, under the inspiration of the Western dairy industry, decided to import cows from Europe to India, including Jerseys, Red Danes, Holstein-Freisians, varieties of animals ill-suited to our set of circumstances. In order to quicken the process of displacement, the NDDB supported the erection of large-scale slaughter-houses so that the Indian breeds could be made into mince-meat and exported to Gulf countries.

No one knows how to punish those who thus multilated, decimated and destroyed this huge biological heritage.

The story now in some detail.

Main contribution from the nomadic communities

It is well-established that the several species of indigenous pure breeds were created by nomadic tribes who specialized in the art of breeding by selection. These breeds were developed over thousands of years and were designed for hot summers, for resistance to insect parasites and tropical disease, and to survive on monsoon grass, paddy straw and other agricultural byproducts. The feed for these animals never competed with the food raised for human beings.

(In the developed world, in contrast, millions of hectares of grains are raised exclusively for animals bred for either milk or meat. In addition, huge quantities of fertile land in Asia and Africa continue to grow grain and oil seeds which are eventually exported to cattle food plants in the advanced countries. While the ecological footprint of Indian dairy herds rarely extends beyond their village or region, the ecological footprint of the European dairy industry has become a major curse around the world, from generation of greenhouse gases to requisitioning of world food supplies and lands.

G.F. Keatinge, writing in 1917, observed: 'It may perhaps have taken many thousand years for our forefathers to evolve the best dairy and draught breeds for the tropics... who could be kept under a tree in hot summer, who could drink village pond water, could stand up to fly and mosquito nuisance and tropical disease and who could live on grazing and monsoonic grass or on roughages ... which are available as agricultural byproducts.

Kankrej: Flourishing in Brazil, but not in India

'If the inquiry were to be made into the history of such breeds... we believe it would be found, in most cases, that their excellence was due to the care bestowed on them by the professional cattle breeders, usually nomadic ... they usually worked under unfavourable conditions, but their skill in selecting and tending cattle was ... considerable.

'(The) professional breeders... pursue their business with considerable skill and knowledge. They are most careful about mating, practice early castration, herd their animals separately and take them to the best grazing grounds at the best seasons, producing excellent cattle with an expenditure that could hardly be lowered ... and sold at a very moderate price.'

The operations of these breeders are documented by L.B. Kulkarni who observed in 1953 that 'they raised their cattle by migrating from place to place according to the abundance of food and water. The year for these breeding tribes commenced with the Diwali festival ... At this time each breeder and his family left the place where they had been settled during the monsoon with the herd of cows headed by a selected bull ... The herd was taken through all parts of the country, through thick jungle and sandy waste and as cattle were of little value when sick or weak or lame, they were left behind ... The whole method led unconsciously to the survival of the fittest and disease was stamped out. One bull headed each herd, so there was little chance of cows being crossed by any other than the bull intended for the purpose. By this wandering, the cattle obtained different kinds of grass and fodder and on the whole obtained a fairly useful and balanced ration ... At the end of a year's wandering .... The breeders returned to dispose of the young ... stock. These were taken by professional rearers who trained them and sold them eventually to cultivators.'

It was through these operations which never challenged the pattern of existing agriculture that these indigenous breeds were raised and maintained.

These facts were recognized by important bodies like the Royal Commission on Agriculture which insisted that any

A nomadic cattlebreeder with his beautifully kept animals: no place in India

programme to develop cattle in India must make use of the traditional skills of the breeding caste and tribes.

Shanti George in her remarkable book, *Operation Flood* (from which some of the information in this article is taken) observes that India's early 5 year plan in fact attempted precisely this through resettlement schemes and the organization of cattle breeding societies of Gopalak Sanghs. The Royal Commission on Agriculture stated that 'systematic investigation, carried out by the Animal Husbandry Bureau of the Imperial Council of Agricultural Research, has shown that by careful selection and proper feeding and management, herds of pure Indian cattle have already been produced with twenty five years which can more than hold their own in India with European cattle .... Already they exceed the average milk yield of commercial dairy herds in Europe and America and there is every evidence that the results are likely to be steadily improved upon for years to come.'

Indian pure breeds imported by other nations

Shanti George notes that recognition of the superiority of indigenous Indian breed, their resistance through climatic extreme, tropical diseases and insects as well as their production potential led to considerable exports of these breeds from Indian soil from the 19th century onward. (This export in fact continues till the present day.)

The cattle drain even at that time caused concern and an Englishman, the Hon. Claude Hill expressed distress over these developments at a meeting of the board of agriculture held at Pusa in 1910. His warnings went unheeded. Except for the Indian states not under British rule, the drain of Indian cattle through export continued. The colonial government itself shipped high yielding buffaloes and Tharparkar cows to the Middle East during the second world war to provide British troops with milk and butter.

N. Chatterjee wrote (in 1926): 'The export of cattle although going on in a small scale for the last hundred or hundred and fifty years has recently assumed serious proportions... Emissaries from various countries of Europe and America are busy all throughout India in purchasing the best breeds of bull and milch cattle and exporting them in large numbers to their respective countries. Thus one gentleman from Brazil is said to have exported fifteen hundred cattle from the Bombay Presidency and Guzrat in the course of a few months in the year 1921. It is reported that there are ten such agents from Brazil. Two other commissioned officers of the Dutch Colonial Veterinary Service are also reported to be exporting the best cattle from the Punjab districts to Sumatra and Java in batches of three to four hundred. The fine breeds of Nellore and Ongole cattle of the Madras Presidency and the superior cattle of the Punjab districts attract every year rich European merchants from Java and Batavia.'

Indigenous Indian pure breeds became the foundation stock not just for American and South American breeds (see separate stories on the role of these breeds in Brazil and the United States), they were taken to Africa as well. Brazil today has more than 80 associations of Gir breeders. It even placed the Gir cow head as a symbol on its coin currency.

A large number of the African countries (where there were erstwhile white settler regimes) were also found to import Brahman breeds from India. Such breeds have become the mainstays of meat and milk production in several countries including Zimbabwe and South Africa.

The Sahiwal is another Indian pure breed that has done well abroad while being completely neglected in India. The breed, for example, was first taken to Kenya in 1930. It was imported because it was strong for long physical walks. Thereafter, they started improving the breed for milk production as well. Kenya instituted the National Sahiwal Study for the purpose.

In the Sudan, the Indian breeds were incoporated into the Buran breeds to give them resistance power against the tsetse fly and tick-borne diseases.

The Sahiwal was also imported into New Zealand in the 1950s together with the Vechur from Kerala. The Vechur is the smallest cow in the world and a distinctive part of our biological heritage.

The National Dairy Development Board goes beserk

However, all this demonstration of good science and good sense was set aside due to the new, deluded, thrust given to dairying by the National Dairy Development Board (NDDB) chaired by Verghese Kurien. Under its tutelage and support, Western dairy scientists and their Indian clones and dairy equipment suppliers were able to impose a new programme of crossbreeding that was now largely based on introducing exotic semen from European herds into Indian cows, both nondescript and pure. There was little scientific justification for this major act of aggression against Indian pure breeds and even less to support the arrival of the fancy, expensive, delicate breeds from Europe.

The argument of the NDDB was that the imported milch animals could give huge quantities of milk which was necessary to supply booming demand for such supplies especially in urban areas. Average yields of milch animals in Europe are about 75 litres per day. These animals, in fact, are treated as machines. They can be impregnated within a few weeks of calf delivery, and will produce milk for seven months of pregnancy. The heifers come into heat in a maximum of two years. All these factors are important in a programme geared to maximum milk production.

However, none of these expectations had any realistic basis to stand on in the Indian countryside.

The negative consequences of using imported breeds as the basis for improving India's milk production were simply not considered seriously enough to introduce any measure of caution in the programme. What were the negative consequences?

1) The progeny of the animals crossed with imported semen would not be useful for draught power. So all male calves were sent to the butcher. Of this there is no dispute. It was accepted simply as an unintended and helpless consequence. Bureaucrats simply shrugged their shoulders. *Indian pure breeds did not have this problem as they produced male calves that could be made into good draught power as well.*

2) The imported stock would be susceptible to a host of diseases which would require a veritable army of imported medicines including vaccines and antibiotics. This has made the entire milk cooperatives and generators dependent upon expensive drugs and multinationals. *Here again, Indian breeds are closely adapted to their environments and have developed good resistance. Resistance to insects and disease was one of the principal reasons why Indian pure breeds have been imported to Malaysia, Brazil, Zimbabwe and New Zealand, to name just the major importers.*

3) One cannot improve a population of animals by indulging in a massive cross-breeding programme. Cross-breeding for improved production is not achieved in any sensible scientific way by getting random animals impregnated with exotic semen. The only tangible consequences of such programmes is that they succeed in *out-crossing* indigenous genes. These points were made tellingly by Dr D.P. Persai, Banwarilal Choudhury and M.Y. Mangrulkar, three individuals who worked all their lives with indigenous pure breeds. They were also strongly urged by the Krishi Goseva Sangh. But in this country since we function only with borrowed science and borrowed minds, we just ignored what they had to say.

4) The NDDB completely ignored the blunt truth that if the Indian milch breeds were not generating large quantities of milk it was simply because there was no artificial fodder. Without a good supply of fodder and a cool environment, coupled with their weakness to tropical conditions including susceptibility to disease (including mastitis), the results of any crossbreeding programme with even the most superior milch breeds would end up with very little milk. And this is precisely what has happened. In most areas, crossbreeds from imported semen do not produce milk at even one-third of their potential. They cause their owners endless headaches.

Ironically, they produce far less than the best of Indian milch breeds even today. Worse, they perform even worse when compared with Indian pure breeds selectively bred abroad.

It is tragic to relate that the Government of India and its animal husbandry planners have no scheme in place even now for the selective improvement of indigenous breeds of Indian cattle either for draught or milk or both. All the present schemes are largely for crossing Indian stock with the semen of exotic stock.

On the contrary, they abandoned earlier efforts in this direction in their new found obsession and madness for foreign breeds. Even fairly sensible organizations like the Bharatiya Agro Industries Foundation (BAIF) which worked under Gandhiji's inspiration on indigenous breeds earlier abandoned their projects when flooded with foreign money and exotic semen and bulls to propagate cross-breeding.

After abandoning the ongoing work on improvement of indigenous pure breeds, the animal husbandry planners did worse: despite it being against official policy, they began to intensify efforts to cross indigenous pure breeds with imported semen or with imported bulls!

If you think this madness was all there was, think further. The banks refused to grant finances to farmers who wanted to use Indian pure breeds for milk programmes. They were told the only animals the banks would support would be imported or cross-breds.

Nowhere in the world is genetic material treated in this fashion.

Even in Goshalas at Sewagram run by the Gandhians, there are no more pure breeds maintained but only mixed cross breeds. Can we as a nation committed to science descend any lower than this?

But that is not the end of the story, horrible though it already is.

The NDDB decided that unless it began a mass slaughter of Indian breeds, the crossbreeding programme would not take root. So what did it do? It used the proceeds from donated supplies of milk powder of Europe (which it sold in the Indian market) to finance the erection of slaughter houses to ensure the rapid decimation of indigenous cattle.

For example, Goa's slaughter house was set up through income from the sale of milk powder donated to Operation Flood and was designed to get rid of the indigenous cattle of Maharashtra, Karnataka and Goa combined.

Today agencies are allowing cow slaughter at an alarming rate of 20 cows per minute. While only 236 slaughterhouses existed in India prior to independence, today there are 36,000 such killing fields, leading to the virtual extinction of several irreplaceable breeds. Believe it or not, only 33 native breeds have survived now, as against a diverse range of 70 breeds a few years ago.

The net result is that a few of the well-established breeds such as the Punganur have already become extinct, and breeds like Krishna Valley are fast approaching the stage of extinction. Excellent draft breeds such as Amrithmahal, Hallikar and Khillari, etc., and good milch breeds like the Sahiwal, Tharparkar and Red Sindhi have reduced in number as well as in quality.

Indigenous cattle play a vital role in livelihood security in our country. Majority of crop growing and livestock rearing areas in India are dryland areas with low and medium input production systems which require conservation of animal genetic diversity. The local breeds of cattle are well known for their draft efficiency, heat tolerance and resistance to diseases. Inherited resistance to (or tolerance of) disease and parasites in livestock has always been a valued trait among stockowners. Today, many of these breeds are disintegrating and degenerating both in quality and quantity, seriously affecting germplasm.

At a localized agro-climatic zone, loss of breed translates into loss of livelihood strategy and loss of indigenous knowledge. The drought prone semi-arid regions are characterized by a major animal component, as animals can exploit resources that cannot support intensive crop cultivation on a sustainable basis. As per FAO records, one third of all Indian breeds of livestock and poultry are threatened with extinction and require conservation. Maintenance and protection of remaining livestock breeds is mandated by the UN Convention on Biological Diversity (CBD). This legal instrument emphasizes the need to conserve agro-biodiversity in the surroundings essential to support the system. It also emphasizes active involvement of indigenous communities and use of their knowledge in conservation. But so far no initiatives are visible in large scale and organizations that maintain domestic animals biodiversity are only now beginning exploration. Experiences with truly community-based approaches to the conservation of local livestock breeds are also lacking.

Some good news at last

Fortunately, amidst the looming darkness, certain points of light and hope exist in the country in the form of Goshalas (cow care centers) opened by several caring and responsible individuals and institutions. But still, there are no centres specially to protect the Indian native breeds, except Nanaji Deshmukh's Deendayal Shodha Sansthan at Chitrakoot in Madhya Pradesh, which is focusing on just 10 breeds.

Totally distressed by this state of affairs, His Holiness Jagadguru Shankaracharya, Sri Sri Raghaveshwara Bharathi Swamiji convened the 'Vishwa Gou Sammelana,' an international conference and festival on Indian breeds of cattle. This festival was held at Shree Ramachandrapura math, Hosanagara, Shimoga district in Karnataka from 21 April 2007 to 29April 2007.

This summit's objective was to promote propagation and improvement of Indian breeds of cattle, to study, document and create awareness about the importance of products from indigenous cows on firm scientific principles for the betterment of mankind. The summit brought together national and international institutions working in this area, farmers, livestock keepers and the goushalas. Resource persons were drawn from among researchers from various countries, social workers, NGOs, farmers, and concerned government departments and others. Exhibitions, live demonstrations and cultural programmes related to the theme were also held.

The conference provided unique insights into the role of cows in the Indian culture, economy, livelihood, religion, etc. Over two and a half million people took part in this mega event of nine days.

Apart from the World Conference, Shrimad Jagadguru Shankaracharya Shri Shri Raghaveswara Bharathi Swamiji has taken up the programme of preservation, improvement, conservation, in depth study and research on the desi cattle and their products in the name of Kamadugha.

As part of Kamadugha, an exclusive Goloka (Cow World) is shaping up in Hosanagara, with diverse cow-centric activities, and 108 goshalas are being contemplated at different places for exclusive local development of each of the native breeds. Also, a variety of cow products are being manufactured in different places to demonstrate the importance of intelligent and nonviolent cattle resource management.

Kamadugha's successful initiatives:

Twenty-seven native pure breeds (pure breeds collected from all over India) have been protected at Amrita Dhara Goshala at Hosanagara. Efforts are on to bring the rest of the surviving breeds too, under the purview of the project.

Artificial insemination has been totally banned in order to discourage inter-breed hybridization

Out of the total of 108 Goshalas planned at places all over India, 12 have already been opened.

A 68-day Bharatiya GoYatra – a 5830 km-long cow-awareness campaign – was carried out successfully at 330 centres of 28 districts in Karnataka and Kerala in 2005-06.

Roberto Luiz Teodorol: Indian Pure Breeds in Brazil

During the first four centuries of Brazil's history, cattle breeding was developed with the use of European cattle (Bos taurus taurus), originated from temperate weather countries. However, at the tropics, weather characteristics and management are very special, leading to a condition of stress to these animals, which could lead them to a decrease in production and even death.

Only from the middle of the last century, producers learned not to fight against nature, getting Zebu cattle (Bos taurus indicus) from India which nowadays occupies the largest part of our continental country. Then, in a few years the Zebu did what the European cattle were not able to do in many centuries: to adapt naturally to the adverse conditions of the Brazilian tropics.

The extraordinary development of Brazil's bovines, particularly in Central, Northern and Northeastern Brazil, was mainly due to the introduction of the Indian breeds. Zebu animals reinvigorated the existing degenerated cattle, introducing the lacking rusticity to the specialized bovine of European origin, through crossings, allowing them to survive, reproduce and, mainly, to produce at the predominant management conditions.

It is estimated that Brazil imported around 800,000 bovines of Europeans breeds, against only 6,000 of the Zebu breeds. Nevertheless, it is also estimated that nowadays around 80% or more of the Brazilian bovine has genes of the Zebu breeds in their genetic composition, demonstrating its importance in the development and improvement of the national herd of cattle.

Brazil is now an important center of cattle raising and selection some Zebu breeds, occupying a good place in the ranking not only quantitatively but, mainly due to high quality level of the cattle, which is a response to the criterious work of selection and improvement, specially inside the farms.

Nowadays it continues through consolidated national programs, which intend to do the improvement of these breeds.

In the beginning of the Zebu importation some animals were brought from Africa, but it was at India that the pioneers of our cattle raising found animals from different Zebu lineages, classified according to their features, functions and utilities, which after crossing with native cattle in Brazil showed to cattle breeders the solution of the majority of their problems.

Among the introduced breeds the ones who predominated were Nellore (originated at Ongole), Gir and Guzerá (originated at Kankrej), followed by Sindhi and Kangayan. The Nelore, Gir and Guzerá breeds were initially explored mainly for their meat, the former being the most predominant and hence occupying a large share of the national raising cattle herd. The Gir breed, and recently the Guzerá breed, have been undergoing, in the last decades, an intensified process of selection and improvement for milk production through programs of progeny test and multiple ovulation and embryo transfer nuclei (MOET). The Sindhi breed, which has low numeric expression but a high potential for milk production, has been raised in small nuclei mainly at the Northeast region of Brazil, a very dry region of our country. A very few farms have also started to work recently with Nelore cattle for milk production.

Productive and reproductive traits of Indian cattle in Brazil

The Gir breed is explored mainly for milk production in India. According to Ledic (1995), when introduced in Brazil this breed was selected for meat production, showing later a lower efficiency in comparison to other Zebu breeds under our environmental conditions. However, it showed potential for milk production and at the 1930s several herds of this breed were formed. The selection for milk production in Gir has begun since this time. In 1985 it was established the progeny test for this breed involving a few number of breeders under supervision and technical coordination of Embrapa, from the Brazilian government. The first results from sire evaluations were reported in 1993. Information about productivity and reproductivity of the Gir breed are shown in Table 1.

This program started with only ten young sires at the first year, increasing this number each year and now we are testing 30 sires a year. These young sires, offspring of the best cows and proven bulls are tested in collaborating farms, where their progenies were produced. They are tested for milk production and its content, as fat and protein milk, lactose and total solids since the market nowadays is paying for them. Until now, 161 bulls were proved for these traits and around 140 more bulls are in test (Verneque et al., 2007). Almost 50,000 lactation records form the data bank of this breed. At the beginning the mean of milk production was around 2,300 kg per lactation and now it is around 2,800 kg, with 290 days of lactation length, in the Gir population. It was due mainly the selection but also due to the improvement of the management, what it is also important. The market of Gir semen increased almost 563% in this period, coming from 70,000 doses sold in 1992, with the first results of the progeny test, to almost 600,000 doses sold in 2006. It represents the success and acceptability of the program for the breeders in Brazil and Latin America.

Table 1. Average for productive and reproductive traits of Gir cows from herds involved in the progeny test for milk production in Brazil.

Trait	Number of observations	Mean	Maximum
Milk yield at 305 days*(kg)	27,431	2,599	14,580
Milk yield per lactation* (kg)	27,431	2,778	16,882
Lactation length (days)	27,431	291	619
Milk fat content (%)	16,771	4.6	7.0
Age at first calving (months)	6,911	45.2	65.5
Calving interval (days)	15,365	492	730

* adjusted to the adult age (between 7 and 8 years old) [In India, maximum 3175, average 1746 kg milk – CA]

Table 2. Average for productive and reproductive traits of Guzerá (Kankrej) cows from herds involved in the progeny test for milk production in Brazil.

Trait	Number of observations	Mean	Maximum
Milk yield at 305 days*(kg)	2,298	2,339	7,234
Milk yield per lactation* (kg)	2,298	2,400	7,255
Lactation length (days)	2,298	285	554
Milk fat content (%)	851	4.9	6.9
Age at first calving (months)	575	44.2	64.7
Calving interval (days)	1,040	456	721

*Adjusted to the adult age [In India, maximum 3500, average 1333 kg milk – CA]

Kankrej

In India the Kankrej breed, equivalent to Guzerá in Brazil, is used for milk production and traction work due to its bulk. In Brazil, since its introduction, it has been used for milk and meat production, although the selection for milk production has intensified only at the beginning of the 1990s. In 1994 the progeny test for milk was initiated and also a program at the open MOET selection nucleus for milk production. The productive performance of these animals is presented in Table 2.

The progeny test here, similar to the Gir program, has proven until now 45 young bulls with other 35 in testing (Teodoro et al., 2007). The MOET (multiple ovulation and embryo transfer) nuclei breeding system consists of a nuclei herd with the best animals available across all herds, in which the MOET technique is used intensively to promote selection. Contemporary families are formed with at least three females and a male. A very important factor to be considered in this system is the high genetic initial lift that can be obtained. Once the initial generation is formed by a small number of elite animals, there will be a high genetic superiority of these animals in relation to the basic population. In developing countries, where there are difficulties in introducing conventional systems for progeny tests, since neither artificial insemination nor milk control are applied at the ideal frequency, the concentration of financial, human and animal resources at MOET nuclei can allow the use of current technologies (Smith, 1988). Considering this information, a MOET nuclei for selection of the Guzerá breed was introduced in 1994 at 'Taboquinha' Farm, located in the district of Itambacuri, in Minas Gerais state. This was a farm with good facilities for field evaluation of progenies produced by CENATTE (Center of Technical Assistance and Embryos Transference) from the elite cows selected for milk yield. This work is also carried out in association with Guzerá breeders and with technical assistance by the Brazilian Center of Guzerá Improvement (CBMG), the Association of Guzerá Breeders from Brazil (ACGB), the Veterinary School of UFMG and Embrapa Dairy Cattle Research Center.

Fifty two families with a total of 105 young males were proven in the MOET nucleus with the results being faster than the progeny test that spend about six to seven years for proving a bull.

A recent study of the genetic trend for this population since at the begin of the program shows a genetic gain about six kg of milk per year and the double of gain only in the MOET population, showing the advantage for using these technology, associated with the Progeny test.

Ongole breed

Although in Brazil the Ongole (or Nelore) breed has been selected for meat production, a number of animals have been selected for milk since the 1970s. Dairy Nelore's selection began in 1972 at the Calciolândia Farm, also in Minas Gerais state. The breeder who selected Nelore for extensive raising, Gir and Kankrej for milk production observed that the milkers regularly milked some Nelore cows for milk consumption of their families. Thus he decided to form a herd of these animals selected among the progenies with potential for milk production.

It was observed that, in general, lactation length is about eight months and the average daily yield is 7.8 kg. The calving interval is lower than 15 months and the age at first calving is three years and three months. Milk yields of about 5,000 kg are also observed, showing a genetic potential for milk production.

Sindhi breed

The Sindhi breed, descended from Pakistan but also easily found in India, was introduced in low numbers at the beginning of this century in Brazil, together with the other zebu breeds. Animals of this breed are in general small, have a good milk production and are well adapted for regions with adverse environment and difficulty for handling large animals. This breed presents some racial characteristics very similar to the Gir breed, which possibly occasioned its absorption into the large Gir population. Nowadays, few nuclei of the breed are still kept, apparently pure, in several Brazilian regions mainly at the Northeast and the North ones. Some cattle breeders, independently, technically accessorized by Embrapa Dairy Cattle, keep some sort of data control of their animals, including milk production, reproduction and measures of racial conformation, in order to better recognize its potential and to genetically evaluate it as pure or crossbred, multiplying and spreading it into regions which better raising conditions, mainly at Brazil's Northeast. ....

Well looked after Gir

Over 500 native cows were brought from Rajastan and distributed in Karnataka and Kerala in 2005-06 through Shaankara GoYatra, a special campaign.

A host of cow products are being manufactured and related training is being given at various centers. Scientific research is being carried out in regard to applications of cow products, including medicines for various diseases.

Cow Therapy Centres (GoChikitsa Kendra) have been opened at Hosanagara, Mysore, Bangalore and South Kanara to treat serious diseases like cancer and TB, and these centers have reported encouraging success rates.

Right knowledge on the use of cow manure is being imparted at various centers, particularly keeping in view the increasing popularity of organic farming

Kamadugha's other far-reaching impacts:

- Enhanced interest in breeding native cows
- Reduction in use of artificial insemination
- Reduction in selling of invalid cows for beef production
- For the first time in India, announcement of special plans for protection of native breeds by the Government of Karnataka –- Interest by the Chief and Deputy Chief Ministers of Karnataka to raise native cows in their official campuses.
- Rise in demand for cow products, particularly cow pharmaceuticals

For more information visit: http://eng.gougram.org

If you want pure breeds, the only persons who maintain them are pastoralists like the Maldaris, or the groups that Seva or Anthra work with. A few organizations like Kasturbagram in Indore have held on to indigenous pure breeds like Gir. Of course, they have no support from government though they work to protect the indigenous resources (or genetic wealth) of this country. Only recently have banks like NABARD opened up to the ideas of supporting dairy programmes using these breeds. For this, NABARD should be congratulated.

His Holiness Jagadguru Shankaracharya, Sri Sri Raghaveshwara Bharathi Swamiji fondly embraces a Gir calf

Organic farmers are encouraged to take an oath that they will not participate in any further efforts to downgrade India's indigenous pure breeds.

Just as they have been responsible for the turnaround in the cow's fortunes, they ought to shoulder the responsibility to ensure that India's pure breeds are also given their rightful place in the agriculture and dairying programmes in their areas.

The OFSB will be glad to hear from farmers who have already taken initiatives in this respect.

Resolutions of the Vishwa Gou Sammelan

Resolutions of the Vishwa Gou Sammelana held in April 2007 at Shree Ramachandrapura Math, Hosanagara, Karnataka.

1. To identify, protect and propagate all Indian Indigenous cow breeds in the home tract.

2. To impose a complete ban on cross breeding with exotic semen.

3. To ban the use of poisonous chemicals in agriculture.

4. To popularize cow based farming and ban the use of machines in agriculture which are harmful to environment.

5. To restore the grazing lands for the purpose of grazing.

6. To carry out extensive research on medicinal and other values of panchagavya and other subjects related to the cow.

7. To include the topics on indigenous cows in school and university curriculum.

8. To implement effective measures to promote cow based industry.

9. Strict enforcement of regulations regarding the safe transport of cows.

10. To enact legislations to protect the basic rights of the cow and prevent its suffering during life and death and to impose stringent punishment for violation.

11. To provide protection for cow protectors.

12. To establish a Cow Protection Authority of India.

13. To bring under one roof individuals and institutions which work for the welfare of cows.

14. To accord the status of the national symbol to the cow and consider her as national wealth.

15. The Government of India should consult the proceedings of Vishwa Gou Sammelana and other NGOs working on indigenous breed cattle, before it takes a stand in international forums and treaties like the Interlaken Treaty of September 2006.

Indian Pure Breeds in the United States of America

Three principal strains or varieties brought to the United States and used in the development of the Brahman breed are the Guzerat (Kankrej), the Nellore (Ongole), and Gir. In addition, the Krishna Valley strain was introduced and used to a lesser extent. The general similarity of the Guzert (Kankrej) strain to the cattle selected and developed in this country would indicate that cattlemen working with the breed have generally preferred this type.

There are conflicting reports as to the exact manner of the introduction of Indian cattle to the United States, but the following account was given to Dr. Hilton Briggs, author of Modern Breeds of Livestock, by the American Brahman Breeders' Association to help summarize the importations:

'The first Indian cattle, of which there is any record, were imported in 1849 by Dr. James Bolton Davis of Fairfield County, South Carolina, who, it is believed, became acquainted with Bos indicus cattle while serving as agricultural advisor to the Sultan of Turkey. Although the descendants of these cattle were spread widely throughout the South, their complete identity was lost during the Civil War. Two Indian bulls were given to Richard Barrow, a cotton and sugar planter of St. Francisville, LA., in 1854, by the British Crown in recognition of Mr. Barrow's services of teaching cotton and sugar cane culture to a British representative who was to take these arts to India. The offspring of these cattle became known as "Barrow Grade" cattle, becoming widely known through the Gulf Coast region. The success of these two animals led to the importation of two more Indian bulls in 1885 by J.M. Frost and Albert Montgomery of Houston, Texas. By mating these two bulls to the offspring of the Barrow bulls, the first attempt to concentrate the blood of Bos indicus cattle in the United States was undertaken.'

In 1905 and 1906, the Pierce Ranch of Pierce, Texas, assisted by Thomas M. O'Connor of Victoria, Texas, imported thirty bulls and three females of several Indian types.

In 1923-24, 90 bulls of the Guzerat, Gir and Nellore types were imported from Brazil. In 1925, a second importation from Brazil, including 120 bulls and 18 females, reached this country. Both groups were shipped to Mexico and driven overland to the United States.

Brahman bulls are now servicing cows on American farms. American cattle breeders spent time and money in selective upgrading of the imported stock, something we failed to do.

Eighteen Brazilian bulls were brought to Texas by way of Mexico in 1946.

Breed Development

It is said that during the period from 1910 to 1920, many cattle in the southwestern part of Texas and the coastal country along the Gulf of Mexico showed considerable evidence of Bos indicus breeding. Naturally, many of the bulls that were used were the result of crosses with other breeds. Some breeders attempted to keep the stock pure, but they were in the minority.

Since there are records of less than 300 imported Brahmans, most of which were bulls, it must be assumed that other breeds supplied the foundation animals for the breed. The bulls were used on cows of the European breeds and on the descendants of these crosses. By the fifth generation (31/32) the offspring carried not only a preponderance of Bos indicus breeding but selection pressure had permitted the development of an animal generally regarded as superior to the original imports for beef production.

Brahman cattle have been found to fill a unique place in American cattle production. The Brahman and cattle carrying percentages of Brahman breeding have been found extremely useful in the southern coastal area of the United States, where they have demonstrated their ability to withstand hot and humid weather and to resist insects. In more recent years Brahman cattle have spread considerably from their initial locations and are now found widely through the United States. They are also good mothers and produce a very satisfactory milk flow under conditions that are adverse for best performance of the European breeds. Cancer eye is almost unknown in the breed.

Probably the greatest tribute to the Brahman breed and its breeders is the rapid growth of the breed outside of the United States. They have constituted a large proportion of exports of breeding cattle outside continental North America.

Interiew: Dr. K. Natarajan

His name is synonymous with Panchagavya used nowadays by farmers. He experimented with the recipe endlessly till he made it perfect. President, Rural Community Action Centre, R.S. Hospital Complex, By-pass Road, Kodumudi – 638 151, Ph.: 094433358379, Email: rcacngo@yahoo.com

Claude Alvares: Could you start from the beginning.

K. Natarajan: In the year 1998 I got your *Organic Farming Sourcebook* when I was at Bangalore. While going through this book, there was an article by a Brazilian scientist [Jose Lutzenberger]who mentioned that he used cow dung and cow urine in equal proportion along with jaggery for fermentation and kept it for 20 days until methane gas was released. After that he used 2% of the solution with water and sprayed on grape vineyards. After spraying once in 15 days, he noticed the growth of the leaves and of the fruits was very good. He noticed that the fruit was very good, and also the taste and the aroma.

After reading that article, I also got an idea of using the same thing in my garden. While I was thinking of preparing the same solution, the Mahashivratri festival was on at the Kudumbiri temple. Panchagavya was served as prasad. At that time I thought panchagavya is made of 5 ingredients from the cow – cow dung, cow's urine, milk, curd and ghee. The French gentleman used 2 ingredients but I thought, why not use all the 5 ingredients. I made an attempt by putting all the 5 ingredients and to improve the fermentation of panchagavya I added jaggery. This man said if you use fresh cow dung you have to keep it for 20 days. So initially I used gobar-gas slurry (because it has already fermented and the methane gas is released) along with cow dung, cow's urine, milk, curd and ghee and also jaggery. Within 7 days the manure was ready.

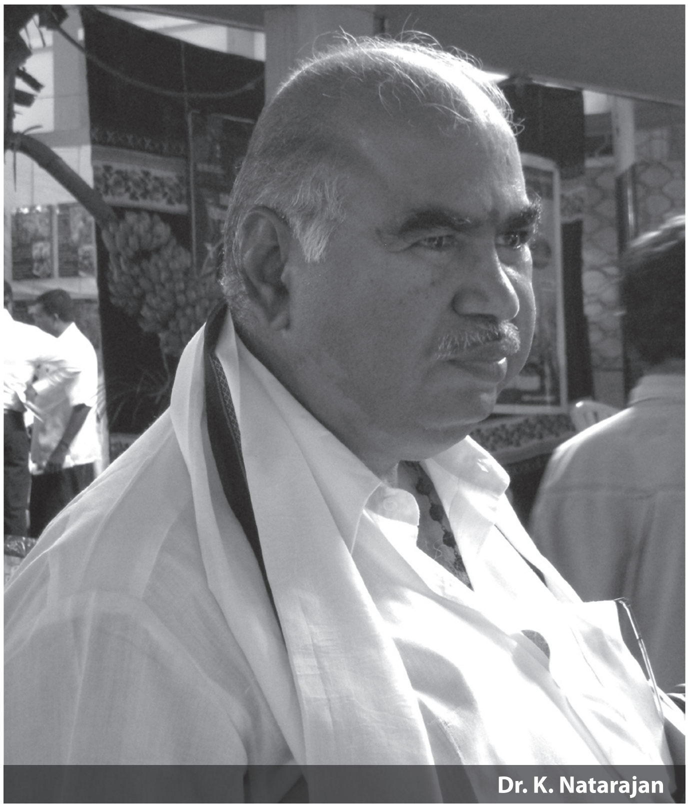
First, I used 3% solution on a drumstick tree. We sprayed this tree every 15 days and the growth was very good, the flowering was excellent and it bore more fruits.

CA: Did you spray the tree or the leaves?

KN: The leaves sir. More leaves and denser flowering developed and the drumstick pods also improved. The pods were longer and bigger in size and they could be kept for a longer period than ordinary drumsticks. This tree was giving very few pods normally. On seeing so many pods, many farmers wanted to use panchagavya for their own farms. So we gave it to them and they used it on paddy, turmeric, onions and vegetable crops, on mango, guava and other fruit crops. The result was very good.

After some time we added tender coconut water, banana fruit and toddy for more fermentation. Previously, the smell was very bad but after adding these things, the smell was tolerable. Now the contents had all minerals and growth-promoting factors as well. And this increased the potency of the panchagavya. The banana fruits helped fermentation and so did toddy. Once we add toddy, the liquid rises by 2 ft. in the drum, a sure indicator of active fermentation .

We then noticed there was a layer of ghee on the surface which was very difficult to dissolve. To overcome this, we experimented and mixed pressed cow dung with ghee for 3 days. This we introduced twice daily. From the 4th day, we experimented in another way. We took the things I had mentioned earlier - cow's urine, curd, milk, ghee, tender coconut water, banana fruits, toddy and jaggery. So instead of 5 things, it has become 9 ingredients. We added 4 more things and modified the variety of panchagavya. Now the ghee does not float on the surface and we use less ghee. Previously, for producing 20 litres of panchagavya we were using 1 kg. ghee but now we use only 500 gms of ghee. So it saves on the cost and easier to spray and plough into the soil.


Dr. K. Natarajan

CA: How much time did you spend on the basic recipe before you became confident?

KN: To make the basic recipe it took 1 month. Then we added the other ingredients one by one so it took 6 months.

CA: If somebody does not have the book or the recipe in front of him, could you give, in brief, the essential steps he must take to make, not panchagavya but navgavya now.

KN: For making approx. 20 litres of panchagavya we need the following:

Ingredients

Fresh cow dung – 5 kg

Fresh cow's urine – 3 litres

Cow's milk – 2 litres

Cow's curd – 2 litres

Cow's ghee – 500 gms

Jaggery – 500 gms plus 3 litres of water (otherwise 3 litres of sugarcane juice is sufficient)

Ripe banana fruit – 1 bunch (12 nos.)

Tender coconut water – 3 litres

Toddy – 2 litres (If toddy is not available, ferment 3 litres of tender coconut water by keeping it in a pot for one week. It will turn to toddy and can be used.)

Method of preparation for 20 litres of panchagavya:

Take 5 kgs of fresh cow dung and mix it thoroughly with 500 gms of cow's ghee and keep it in a plastic drum or a mud pot. It should not be kept in a metal container because it will corrode and react with the metal. Keep the ghee and the cow dung mixure for 3 days, stirring it twice a day. On the 4th day you can add cow's urine, cow's milk (boiled and cooled) and cow's curd, then jaggery with water or sugarcane juice and banana fruit (which has to be mashed and mixed thoroughly.) Then toddy or fermented tender coconut water has to be added. By the 3rd or 4th day, you should have added all the things and then you have to wait for another15 days, stirring twice daily. On the 18th day the panchagavya solution will be ready. The solution must be kept covered with muslin or fine cloth to avoid developing maggots/worms. On the 18th day, Panchagavya is ready for use.

CA: After the 18th day, do you have to keep stirring it or you can use it?

KN: As long as you keep it, at least once a day you have to stir to help air circulation. The more air it gets, it will get better and keep better, and otherwise it will develop maggots.

CA: Can this be used as a dilution in water or as a folio spray?

KN: The water in panchgavya solution contains all the major nutrients – nitrogen, phosphorus, potash, all the micro-acids like folic acid etc. It contains essential vitamins and enzymes. It contains everything.

CA: Have you done a laboratory analysis? What have you found?

KN: Yes, we have done a laboratory analysis. It contains all these elements. It has everything. We have the reports.

The mode of usage is: It has to be made as a 3% solution with water i.e. 3% of panchgavya with 97% of water can be used as a folio spray. It can be used for root irrigation, in irrigation water. It can be used for seed treatment. These are the main main uses, among others.

Periodicity of use: Once in 15 days, it can be used for all crops. In winter crops, 1.5-2% usage is sufficient but for all other crops 3% should be used.

CA: You were saying that Tamil Nadu Agricultural University has done some work on this. What are their results?

KN: They have got very good results for all crops. What they say is that it improves the immunity of the crops. It improves the growth of the plants, yield also increases and the shelf-life keeping of the crops goes up and the quality of the produce is excellent.

CA: Have they done some research papers on this?

KN: Yes they have. I will send them to you.

CA: Now tell me, since this is one question everybody is asking, if they have no cows, what is to be done? Can they use other animals' dung? Like goat's dung, can they use it?

KN: Yes they can use it but it is difficult to get goat's urine.

CA: So if you use goat's dung, you have to use goat's urine also.

KN: That's correct. Some people are using buffalo's dung and buffalo's urine also. It is useful but it is not so effective. It has more disease. Panchagavya made from the cow is useful not only for plants but for animals and human beings also.

CA: In animals, what has been your results with regard to their health?

KN: In animals, it improves the digestion. It has a good feed conversion ratio and the digestion process also improves so the animals also gain good weight. It improves the immunity of the animals and they don't get many diseases. It acts like a vaccine thus saving on costs and it also acts like an antibiotic for all diseases for animals, even for the cows like mastitis and foot-and-mouth disease. It is also very effective against viral fever.

CA: And what about human beings?

KN: In human beings also, it is remedial in all diseases. It improves digestion, eliminates constipation and improves health by increasing the immunity of the person. It helps a person to eat more and to be fit and active. It cures peptic ulcers, helps to reduce blood-levels in high blood pressure and diabetic persons. (In non-diabetic persons, it is also useful.) In hypothyroidism and hyper-thyroidism, it regulates the thyroid glands to normal levels. In bronchial asthma, it cures many persons. If you give it to HIV AIDS persons, it improves their immunity and they have more food and put on weight because AIDS patients lose weight very fast and are susceptible to illness. In 1 or 2 years, they even go to normal work. They don't get tuberculosis, diarrhoea and the blood improves though they are still Positive, (it doesn't become Negative) but their health is normal and they remain very fine.

CA: How many litres of panchagavya are you selling at your Centre?

KN: For human beings, from my Centre we are selling monthly 200 litres of panchagavya. For human beings, we use a higher form of panchagavya which does not have any cow dung smell. In the pharmacies, it is called Amruta Sanjivani because when you say panchagavya, they think of cow dung smell so we just changed the name. They then think it is helpful and it helps in almost all the cases. For external use, the ordinary panchagavya can be used, especially in skin diseases like psoriasis.

Many farmers are using panchagavya for everything – for their plants, animals, their families and relatives. They have become almost doctors and experts. Almost everyday in the press there are reports of how it is used for still more different purposes. Their experience is useful to us also because we do not use it for all purposes. So it is useful for us also. Wherever we go in Tamil Nadu, in some corner of the house panchagavya is fermenting.

CA: Did you expect this panchagavya of yours would create such a revolution?

KN: Never. Its popularity has spread like wild fire. After your publication of the English edition, it has gone very deep all over India and even in other foreign countries. Now it is published in Marathi, Kannada, Telegu.

Last week, at the Thirupathi Devastham, they have a goshala with 750 cows for their milk requirements. There the cow dung and urine is going to waste. First, they went to Go Vigyan Kendra at Nagpur where they make some ayurvedic medicines out of cow dung, cow's urine, milk, curd and ghee. We had given our English edition book to the Director of the Goshala, Mr.Reddy. We had said that you cannot make ayurvedic medicine with such a large quantity of cow dung and urine. So we contacted Dr.Reddy and suggested to him to go for panchagavya preparation. So after discussions, they decided at Tirupathi Devastham they are going to start panchagavya preparation and they will be calling us.

CA: I don't know whether it is the Devastham who has called you or the Tirupathi god who has called you.

KN: Yes, it is also a darshan.

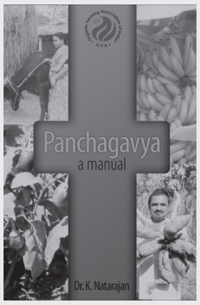
CA: It is now only that people are realizing what a Lakshmi the cow is. All those people who are sending their cows for slaughter, they are all crying.

KN: They are running an ayurvedic clinic with 180 beds. They promised to prepare the panchagavya and distribute it free to the people. First they thought the cow is only useful for giving milk but after our discussion at a meeting with them, they came to know that the cow is not only a producer of milk, it is a pharmaceutical factory producing so many medicines. Now they feel that once people come to know the usefulness of the cow dung and its urine, they may stop killing cows.

CA: That will be the biggest benefit. Thank you Dr.Natajaran.

Panchagavya Manual

Panchagavya: A manual



By Dr. K. Natarajan

Pp. 32 (2003)
Rs 25
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An almost miraculous brew originally made from five products of the cow (dung, urine, ghee, curd and milk), Panchagavya is revolutionising the practice of organic farming in the country.

A fusion of traditional wisdom and painstaking experimentation, Panchagavya is a gift that everyone concerned with organic farming should know about.

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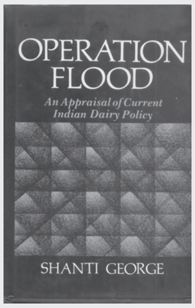
A Flood of Blood

Operation Flood



By Shanti George

Price: 319
Oxford University Press

This excellently researched and written book which contains substantial discussions on indigenous pure breeds has been out of print for some time now. If you can get a copy from any public library, do so. You can also ask OFAI to send you a xerox copy if you cannot get it anywhere.

Shanti George completely demolished the claims of the Indian dairy authorities on several key issues relating to Indian dairying, especially the issue of indigenous pure breeds. She did so within the context of the Operation Flood project that was pumped up by Verghese Kurien and the National Dairy Development Board.

Her book rattled the dairy authorities as they had no answer to her research, her arguments, her logic and her concern for Indian cattle, especially the Indian pure breeds.

For those who do not know, Operation Flood was an ambitious dairy development program begun in India in the 1970s wherein surplus dairy commodities donated by European nations were recombined with local milk for sale to consumers. Proceeds were ostensibly invested in dairy production and marketing infrastructure (including slaughterhouses) to enhance productivity while directing income benefits to the poor.

Shanti George concluded that the operation's emphasis on high-speed, high-cost artificial development through imported technology was seriously detrimental to India's dairy economy and that less expensive indigenous alternatives were better suited to India's needs.

Instead of paying heed to what she was saying – as an intelligent academic she had no personal interest or stake in what she was writing about – the authorities continued and expanded the programme. As a matter of fact, this first rate book on the role of animals in Indian agriculture was not reprinted after the first edition was sold out. Shanti George took up other social science assignments and disappeared from the Indian social science. Nobody would have blamed her for throwing up her hands in disgust.

Now, twenty five years later, all the issues she raised are coming back to haunt the country. No one can explain the stupidity of what we did in the past three decades to our cattle. And will anyone forgive?

ANTHRA

ANTHRA is a resource group that was started by a team of women veterinary scientists in 1992 to address the myriad constraints that faced rural livestock rearers. In 1995, ANTHRA was registered as a trust with an all-women governing board.

The initial aim of the organization was to search for alternative systems for delivering livestock health and management practices to poor people, especially women in rural areas. Today, ANTHRA is a resource centre offering training, research and advocacy initiatives in the areas of livestock, biodiversity and people's livelihood.

Anthra has two operating offices: in Hyderabad and Pune.

ANTHRA aims to work for sustainable livestock production within the larger framework of building people's food sovereignty and livelihood security. It actively protects, strengthens and works towards keeping indigenous knowledge and the diversity of cultures alive. The focus is on farming and production systems, crops and fodder varieties, livestock and plant genetic resources, medicinal plants and health care traditions, and land and water use.

The organisation works mainly with marginalized communities – Dalits, adivasis, pastoralists, landless groups, small and marginal farmers, and, especially, women from these communities. It actively supports and promotes viable and sustainable community-based, livelihood-enriching alternatives for these communities. Presently, ANTHRA works with such communities in the states of Andhra Pradesh, Maharashtra, Chhattisgarh andKarnataka.

As a rule, ANTHRA supports viable, community-based livelihood-enriching interventions rather than mainstream, dominant development paradigms. The organisation counters and questions policies and programmes that harm or displace the poor from their livelihoods and violate their basic human rights.

The organisation has since grown both in terms of numbers and life-skills, and today comprises a group of women and men professionals with diverse and varying skills and expertise: health professionals, sociologists, gender specialists, botanists...

Animal Health Workers (AHWs) and Healers' Network

ANTHRA works with Animal Health Workers and healers that have initiated different platforms. Anthra plays a supportive role to these platforms.

Membership

There is an annual membership fee for AHWs, which is different in the Maharashtra Network and the Andhra Pradesh network. Membership is free for traditional healers.

Some current concerns of healers and AHWs include:

· Putting a halt to the indiscriminate harvesting of medicinal plants by outside traders and commercial enterprises

· Ensuring that the local community has the first right to the medicinal herbs – before they get exported out for urban use or out of the country

· Recognition of healers and AHWs as primary health providers

· Ensuring that patent regimes and intellectual property regimes do not misuse the healers' valuable knowledge. Many healers believe that their knowledge must benefit the local community and should not be privatized for private profits or gains

· Making medicines user-friendly (preparing ready to use powders, tinctures and tablets)

· Campaigning for preserving indigenous breeds of livestock and poultry

· Campaigning against the recent grazing policy brought out by the Andhra Pradesh Forest Department

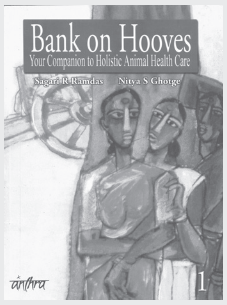
· Campaigning against the indiscriminate use of toxic chemical pesticides which contaminate both food and fodder crops.

Over the years ANTHRA has collected a considerable amount of data and information, mainly related to livestock production systems within the Indian context. To index and manage this exhaustive information and data the organisation has developed a unique documentation centre where information can be retrieved and used by the wider community.

* * *

Publications in English

***Bank on Hooves:* Your Companion to Holistic Animal Health**



In two volumes

Rs 500

Available from OIB

This book is in two volumes. Volume one guides the reader in participatory approaches to planning and monitoring livestock interventions with the community. It also discusses sound animal management practices essential for good health and production- for animal in the overall context of sustainable natural resource use. The final part of this volume discusses principles of diagnosis, different systems of medicine, principles of medicine making and administration. The second volume is about specific diseases that effect livestock and poultry their treatment and prevention

Low cost booklets for farmers (in Marathi)

Janavaransathi Aushadi Vanaspati va Upchar

* * *

(Herbal Remedies for Treating Livestock)

Part 1. Price Rs 25.00

This volume deals with the different sytems of medicine used to treat livestock such as allopathy, ayurveda, homeopathy and folk. It also discusses their relative merits and demerits. It discusses medicinal plants, their collection and storage for medicine making. Finally, it elaborates on different methods for preparing herbal remedies and their methods of administration.

Janavaransathi Aushadi Vanaspati va Upchar (Herbal Remedies for Treating Livestock)

* * *

Part 2. Price Rs 65.00

This volume describes various livestock diseases, their symptoms, prevention and where possible treatment using validated and well known herbal remedies. Diseases are classified according to physiological systems: digestive , reproductive, etc. The booklet is well illustrated and is an easy to use reference book for field practitioners and development workers

* * *

Janavaransathi Nivara

(Shelters for livestock)

Price Rs 20.00

This book looks at different aspects of animal housing. It contains detailed information of housing types across different agro ecological zones in Maharashtra. It takes the reader from the stage of building a shed using locally available material to its maintenance, management and upkeep.

* * *

Khurak va Changle Aarogya

(Nutrition and good health)

Price Rs 25.00

This book deals with the importance of nutrition for good health of livestock. It is an easy reference book for those owning livestock. It is well illustrated and carries important details about water, fodder, concentrates, balanced diet and special feeds for milching and small animals,

* * *

Parasdaratil Kombdi Palan

(Raising backyard poultry)

Price Rs 25.00

This book deals with different aspects of rearing back yard poultry. It is an easy reference book for those owning poultry. It is well illustrated and carries important details about the breeds of backyard poultry found in Maharashtra, their management, housing, common diseases and their treatment using simple household remedies where applicable.

* * *

Chala Shelya Palu Ya

(Come, let's rear goats)

Price Rs 40.00

Herder with group of indigenous pure breeds

This book deals with different aspects of rearing goats. It is an easy reference book and is well illustrated. It has details about the breeds of goats found in Maharashtra, their production features and economics, care and management, housing, common diseases and their treatment using simple household remedies where applicable.

* * *

Sahyadritil Chara Sampatti

Price Rs.300.00

This book dealing with the fodder wealth of the Sahayadri region of the Western Ghats of Maharastra is divided into two sections. Section one deals with the process by which the information was documented including PRA excercises through which similar information can be collated. Section two describes over 80 species native to the region along with line diagrams and details of region found, palatability, availability, traditional evaluation, other uses and propagation methods, if known. The book also contains two indexes one in Marathi giving different regional names and one with the botanical name.

* * *

Material on environmental orientation to school education (Marathi)

Price Rs 140.00 (Set)

Gruha Sanvardhit Jaivik Vividhata (Domesticated biodiversity)

This training manual in Marathi, specially meant for for secondary school teachers, traces the history of domestication of crops, livestock and microorganisms to emerging trends in the field of biotechnology. It describes activities which the teachers can undertake with their students to explain these concepts. It also brings out interesting links between history, science and geography. Plus posters and flip charts on useful grasses and weeds, medicinal and fodder plants and livestock breeds of Maharashtra.

Similar booklets, books and posters are also available in Telugu. Check out their website: http://www.anthra.org/

Kamadhenu: A Trust For Conservation Of Indigenous Cattle

Kamadhenu, C/O Madanapalle Farmers Association, Surabhi Colony, Madanapalle – 517325, Chittoor, Andhra Pradesh.

Contact: Mohan Surabhi – 09247624508, 09290086715, Santosh Kumar – 09849691869, Jagadeesh – 09866013046

An active group of farmers from in and around Madanapalle town have formed a trust by name Kamadhenu.

Objectives of the trust are: Conservation of Indigenous cattle, educating the public about the importance of indigenous cattle, promotion of cow-based farming.

So far, they have obtained the following breeds of cattle: Deoni, Gir, Tharparkar, Kankrej, Hallikaar, Malenada Gidda and ongole. They also plan to work on the improvement of the Hallikar breed and the conservation of Punganur breed, which is nearing extinction. (Source: Communication with OIP)

Centres / Institutes For Indian Cattle Breeds

Amritmahal

Govt. of Karnataka: Ajjampur, Hessarghatta Deoni, Karnatraka

Univ. of Agricultural Scs, Dharwad, Andhra Pradesh

Deoni Cattle Breeding Farm, Gudgaripalli, Andhra Pradesh

Govt of Andhra Pradesh, Kampasagar, Andhra Padesh

Govt. of Maharashtra, Udgir, Maharashtra

Marathwada Agril University, Parbhani, Maharashtra

Gaolao

Central Breeding Institute, Hetikundi, MH

Govt of Maharashtra: Hetikundi, Pohara, Yeotmal, Maharashtra

Gir

Govt. of Goa, Copardem, Goa

Akshar Purushottam Mandir Gaushala, Gondal, Gujarat

BAIF-Magazari Farm, Zamp, Gujarat

Bochasanwasi Shree Akshar Purus-hottam Gaushala Trust Bochasan, Gujarat

Govt of Gujarat, Dhoraji, Gujarat

Gujarat Agril University, Junagadh, Gujarat

Lok Bharti Gaushala, Sanosara, Gujarat

Sabarmati Ashram Gaushala, Bidaj, Gujarat

Govt of Karnataka: Koila, Karnataka

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh

Kasturbagram Krishi Kshetra, Indore, MP

Raymond's Embryo Research Centre, Gopalnagar, Madhya Pradesh

Mumbai Gow-Rakshak Mandali, Mumbai, Maharashtra

Mumbai Panjrapol, Mumbai, Maharashtra

Govt. of Maharashtra: Jath, Kopergaon, Maharashtra

Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra

Panjrapol Sanstha Sangli, Sangli, Maharashtra

Shree Nasik Panchvati Panjrapol, Nasik, Maharashtra

Govt. of Rajasthan, Dag, Rajasthan

Hallikar

Govt. of Karnataka: Hessarghatta, Koila, Karnataka

Hariana

Govt. of Assam: Barpeta, Guwahati, Jagduar, Khanikar, Manja, Pachmile, Assam

Birsa Agril Univ, Ranchi, Bihar

Govt. of Bihar: Dumraon, Purnea, Sairakela, Bihar

Shri Gaushala, Bhagalpur, Bihar

Government Livestock Farm, Hisar, Haryana

Haryana Agril University, Hisar, Haryana

Shri Gaushala Society, Panipat, Haryana

State Cattle Breeding Farm, Hisar, Haryana

Govt. of Madhya Pradesh: Imlikhera, Kiratpur, Minora, Pakaria, Madhya Pradesh

Bull Rearing Centre, Nagpur, Maharashtra

Govt. of Maharashtra: Hetikundi, Kopergaon, Maharashtra

Punjabrao Krishi Vidyapeeth, Warud, Maharashtra

Govt. of Orissa: Bolangir, Boudh, Chiplima, Keonjhar, Orissa

Govt. of Rajasthan, Kumher, Rajasthan

Govt. of Uttar Pradesh: Babugarh, Hastinapur, Neelgaon, Saidpur, Uttar Pradesh

Mathura Vrindaban Hasanand Gochar Bhumi Trust, Mathura, Uttar Pradesh

Kankrej

BAIF-Magazari Farm, Zamp, Gujarat

Bidda Pinjrapole & Gaushala, Mandvi, Gujarat

Bochasanwasi Shree Akshar Purush-ottam Gaushala Trust, Bochasan, Gujarat

Govt. of Gujarat: Bhuj, Mandvi, Thara, Gujarat

Gujarat Agricultural University, Anand, Gujarat

Mansa Gaushala Trust, Vijapur, Gujarat

Khillari

Govt. of Karnataka, Bankapur, Karnataka

Govt. of Maharashtra: Hingoli, Jath, Junoni Malvi, Maharashtra

Govt. of Madhya Pradesh, Agar, Madhya Pradesh

Govt. of Rajasthan, Dag, Rajasthan

Nagori

Govt. of Rajasthan, Nagour, Rajasthan

Nimari

Govt. of Maharashtra, Bod, Maharashtra

Ongole

AP Agricultural University, Guntur, Andhra Pradesh

Govt. of Andhra Pradesh: Kakinada, Kampasagar, Mahanandi, Vishakhapatnam, Andhra Pradesh

Ongole Cattle Breeding Farm, Ramathirtham, Andhra Pradesh

Ongole Cattle Breeding Project, Guntur, Andhra Pradesh

Rathi

Govt. of Kerala, Maruthamala, Kerala

Govt. of Maharashtra, Hingoli, Kerala

Govt. of Rajasthan, Nohar, Kerala

SKN College of Agriculture, Jobner, Kerala

College of Veterinary and Animal Science, Bikaner, Kerala

GB Pant Univ. of Agri & Tech, Pantnagar, UP

Red Sindhi

Govt. of Assam: Barpeta, Jagdaur, Silchar, Assam

Indo-Australian Cattle Breeding Project, Barpeta, Assam

Govt. of Bihar, Gouikarma, Bihar

Govt. of Goa, Dhat, Goa

Govt. of Jammu & Kashmir, Beli Charana, Jammu & Kashmir

Govt. of Karnataka: Koila, Karnataka

Govt. of Kerala, Kodapanakunnu, Kerala

Government Dairy Unit, Kavaratti, Lakshadweep

Punjabrao Krishi Vidyapeeth, Warud, Maharashtra

Central Cattle Breeding Farm, Basantpur, Orissa

Govt. of Orissa, Bolangir, Orissa

Govt. of Tamil Nadu: Chettinad, Hosur, Orthanad, Pudukkottai, Tirunelveli, Tamil Nadu

Govt. of Uttar Pradesh, Kalsi, Uttar Pradesh

Sahiwal

Govt. of Assam: Jagduar, Pachmile, Silchar, Assam

Indian Agricultural Research Institute, Delhi

Sabarmati Ashram Gaushala, Bidaj, Gujarat

Government Livestock Farm, Hisar, Haryana

National Dairy Research Institute, Karnal,

Centres / Institutes

Haryana

- Shri Gaushala Society (Regd), Panipat, Haryana
- State Cattle Breeding Farm, Hisar, Haryana
- Govt. of Jammu & Kashmir: Beli Charana, Jammu & Kashmir
- Govt. of Madhya Pradesh, Anjora, Madhya Pradesh
- Raymond's Embryo Research Centre, Goplanagar, Madhya Pradesh
- Govt. of Maharashtra, Bod, Wadsa, Maharashtra
- Amritsar Pinjrapole Gaushala, Amritsar, Punjab
- Govt. of Punjab: Nabha, Punjab
- Punjab Agricultural University, Ludhiana, Punjab
- Tamil Nadu Cooperative Milk Producers Federation Ltd, Udhagamandalam, Tamil Nadu
- GB Pant Univ of Agri & Tech, Pantnagar, Uttar Pradesh
- Govt. of Uttar Pradesh, Chak-Ganjaria, Uttar Pradesh
- Military Dairy Farm, Meerut, Uttar Pradesh
- Project Directorate on Cattle, Meerut, Uttar Pradesh

Sunandani

- Kerala Livestock Development Board, Mattupatti, Kerala

Tharparkar

- Govt. of Andhra Pradesh: Kampasagar, Karimnagar, Mamnoor, Andhra Pradesh
- Birsa Agril Univ, Ranchi, Bihar
- Govt. of Bihar: Purnea, Sairakela, Bihar
- Government Livestock Farm, Hisar, Haryana
- National Dairy Research Institute, Karnal, Haryana
- Govt. of Maharashtra, Pohara, Yeotmal, Maharashtra
- Central Cattle Breeding Farm, Suratgarh, Rajasthan
- Govt. of Rajasthan, Chandan, Rajasthan
- Govt of Tamil Nadu, Chettinad, Tamil Nadu
- Central Cattle Breeding Farm, Lakhimpur, Uttar Pradesh
- Govt of Uttar Pradesh, Bharari, Uttar Pradesh
- Exotic Cattle Breeds, Uttar Pradesh

Approximate Population of Indigenous Cattle Breeds

Cattle Breed	**Approximate Population**
Amritmahal	25,000
Bachaur	10,948
Bargur	NA
Dangi	1,08,197
Deoni	1,18,945
Gaolao	NA
Gir	9,17,081
Hallikar	about 20 lakhs
Hariana	NA
Kangayam	4,79,200
Kankrej	NA
Kenkatha	NA
Kherigarh	15,709
Khillar	8.12 lakhs
Krishna Valley	approx. 250
Malvi	53,700
Mewati	NA
Nagori	1.73 lakhs
Nimari	1.10 lakhs
Ongole	7341 in 60 villages under survey
Ponwar	10,667
Punganur	in hundreds only
Rathi	NA
Red Kandhari	14,000
Red Sindhi	NA
Sahiwal	NA
Siri	10,000
Tharparkar	NA
Umblachery	2.83 lakhs
Vechur	in hundreds only
Gangatiri	67,000
Malnad Gidda	more than 10 lakhs
Tho Tho	89,337

(Source: *Cattle Diversity of India, P K Singh*)

Population of Indigenous Cattle in India

Category	Population in million			Percent increase/decrease 1992-07	Percent increase/decrease 1997-2003
	1992	1997	2003		
Crossbred	15.22	20.01	24.48	34.2	22.3
Indigenous	189.37	178.78	160.7	-5.6	-10.1
Total	204.58	198.88	185.18	-2.8	-6.9

The need for enhancing people's capacity to cope with drought, barren land, degraded soil and growing scarcity of ground water in many villages of Tamil Nadu has encouraged us to explore alternate ways and means of sustainable livelihoods. We believe that solutions are locally appropriate and feasible when they are based on indigenous knowledge. This has been the guiding philosophy of 'SEVA' facilitators since the organisation's inception in 1991. Sri. P. Vivekanandan, the founder and the present executive director collaborated with a group of friends, classmates and community volunteers and together they registered SEVA as a voluntary organisation.

SEVA initiated its work with the specific focus on researching rural peoples knowledge systems concerning plants, environmental values and diverse bio-diversity conservation traditions. While emphasising preservation of indigenous agricultural practices SEVA initiated far reaching developmental efforts such as:

- Promotion of farmers experimentation to test watering schedules and tree seedlings methods in drylands
- Exploration of new plant species and underutilized plants for deriving economic benefits to small holders
- Preservation and dissemination of community conservation traditions such as sacred groves wasteland afforestation through women groups
- Organization of biodiversity contests for school children for transfer of knowledge from one generation to another
- Publishing of Tamil newsletters for communication of indigenous agricultural technologies/farmers innovations, ethnoveterinary practices in collaboration with Honeybee Network, SRISTI, Ahmedabad.

SEVA has organised an interactive workshop at Ooty and Thalavadi areas involving all stake holders for conserving the Toda buffalo.

International Workshop on Local Livestock Breeds for Sustainable Livelihoods

Domestic animal diversity has received much less attention than either crop genetic resources or wild biodiversity; so far there has been virtually no debate on how to involve farmers and pastoralists in the conservation of threatened livestock and poultry breeds.

In order to remedy this situation and catalyze discussion and action, three NGOs (Lokhit Pashu-Palak Sansthan, SEVA, and League for Pastoral Peoples) invited about 80 representatives of pastoral associations, rural development NGOs, scientific institutions and government departments to an international conference and workshop that was held in Rajasthan from 1-4 November, 2000. 'Sadri Declaration' was passed by the participants after the workshop.

SEVA helped the Malai Madu Cattle Breeders Association to promote four 'Kedai Sangams' (Herdsmen Association) in 4 villages of Watrap Block (Kansapuram, W. Pudupatti, Koomapatti and Sethunarayanapuram). There are 72 members who maintain 12000 'malaimadu' breed of indigenous cattle and sheep. The population of the breed is reduced to 1/ 10th of original size. Malaimadu breed is providing draught bullocks and manure to the farmers. These animals are very good for wetland ploughing.

SEVA has been taking all steps for describing the breed characters and striving for official recognition. SEVA is also negotiating with Forest Dept., for providing grazing permit for the cattle owners so as to save this breed from extinction. The grazing permit had been withdrawn when the forest was declared Grizzled Giant Squirrel Wildlife Sanctuary.

SEVA has promoted Umbalacherry Breeders Association for the purpose of conserving Umbalacherry breed. The bullocks are known for efficient wetland ploughing, having resistance power to infectious diseases and requires least maintenance cost which thrive well on feeding paddy straw. The owners of the cattle are facing problems like encroachment of ponds and grazing lands. Three members of this association attended a two days conference on Kangayam breed at Erode in March 2001. (A cattle show and conservation seminar was later organised on 18th July 2001 at Umbalacherry Village. Umbalacherry Breeders Association has been registered as society by involving 234 members in 21 villages).

Katchakatti sheep breeders Association

SEVA has promoted Katchakatti sheep breeders association in Katchakatti village, near Madurai. Eleven herders maintaining Katchakatti karuppu sheep joined this group.

Vembur Sheep Breeders Association

Vembur sheep breed is known for its good body weight in dry black cotton soil tract of Thuthukudi and Virudhunagar Districts. The body of the breed has brown patches with white background. This breed is prevalent in Melakaranthai, Keelakaranthai, Patty Devanpatty, Mettilpatty, Alagapuri, Kodangipatty, Soorappanayakan-patty, Perumal Koilpatty, Supplapuram, Sevalarpatty, Melapatty, Sengottai, Ramasamy-puram. SEVA has promoted breeders group by involving initially 6 herders maintaining a population of 250 in Vembur village. It plans to promote such groups in other villages where this breed is found.

Contact Address of SEVA:
45, T.P.M.Nagar
Virattipathu,
Madurai
Tamil Nadu, India.
Phone : 0091- 452 - 2380082
e-mail : numvali@sancharnet.in
www.seva-ngo.org

The country's population of organic farmers has been steadily increasing over the years. Yet there has been no commensurate record of organic farming activities within the country. Between the appearance of the third edition and the present one, an organisation of record has finally emerged on the scene: the Organic Farming Association of India.

The emergence of OFAI (www.ofai.org) means that at least now we shall have a data-base of organic farmers and farms in the country which will be updated from time to time.

There are two categories of persons and institutions listed in the present directory. The first comprises active organic farmers and farming families. The second includes organic farming promoters. Both are equally important to the organic farming movement. We have not included those merely 'interested' in organic farming.

The directory is organised statewise (states running alphabetically, organised around a region) and as follows: a detailed interview with an organic farming pioneer or promoter from the state leads the section, followed by smaller interviews, case studies and finally bare registers of names of organic farmers and institutions. We have tried to check each name carefully and there may still be mistakes occasionally. However, as the *Sourcebook* will be continuously in print and constantly updated, we expect information to be appropriately revised in future editions.

No wonder then that the Directory that follows has turned out to be the bulkiest section in the *Sourcebook*.

For those who wish to get into organic farming or share the experience of their own experiments, here is a list of like-minded souls.

The tribe, as we noted earlier, is decidedly on the increase.

One day, all farming will be done this way.

Chapter Eight

Directory of Organic Farms, Farmers and Promoters

Andhra Pradesh

Interview with Dr. Venkat

Dr. Venkat, now in his eighties, is the founder of the Permaculture Association of India. He has influenced and groomed a generation of ecological farmers, activists and thinkers. He has written two booklets, *Compost* and *Management of Landscapes onWatershed Basis*.

Address: Permaculture Resources, 117 East Marredpally,
Secunderabad – 500 026 Andhra Pradesh. Ph. 040 27733165

CA: There is a boom in organic farming all over India and elsewhere. How do you respond to this?

V: I am glad you have raised this issue for, it is necessary to have a critique of the role of organic farming and place it in its proper perspective.

How food is produced and how it travels from the farmlands to people's tables is something that has always been the concern of human society. However, it is to be borne in mind that the production of food is a social activity, involving very many players together with the natural environmental resources like soil, water, vegetation and climatic conditions.

When once we place food production in the social domain, the environmental, social, economic and political relationships get inter-connected with the very structure of society. Hence it becomes necessary to have a critique of society itself whenever we have to respond to various social activities like agriculture, education, health, peace, war etc. etc.

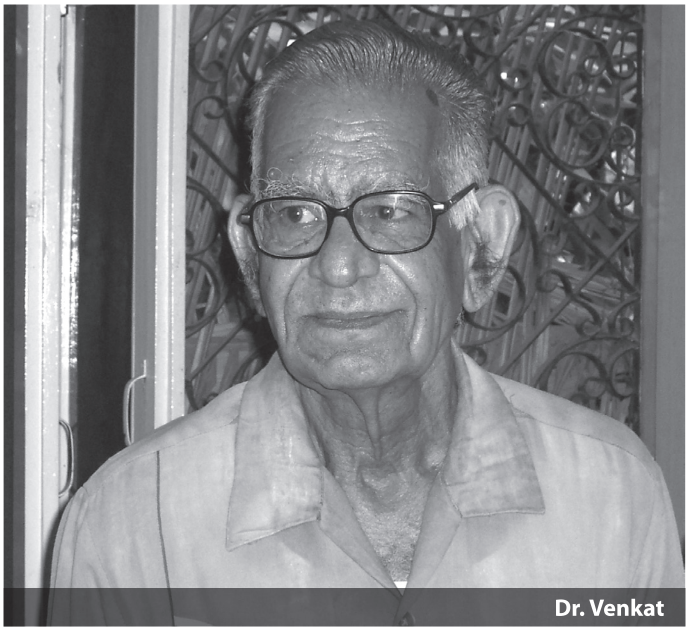
What I wish to suggest is that all our social activities have to be assessed in the context of the structure of the social system under which we live. To ignore this context will only result in a reductionist approach which will be of no use towards solutions to the problems we are confronted with.

CA: What are the dominant and crucial characteristics of present day society which have to be taken into consideration as the contest?

V: There are many. However, the dominant characteristic of the social system under which we presently live, in the commodification of all things, including Nature herself. This is being promoted with only one end in view: the production of profit, monetary. This is the feature or alankara of the capitalist system under which we live today.

The operative or driving forces in this system are the blind yet powerful market forces. These ultimately decide what you grow, how you grow it, who appropriates the produce and as a producer what you get back in return for your labour.

The experienced and felt effect of these market forces has been the destruction of the small and marginal farmers world over. Today this threat is looming large in our country. So much so subsistence farming is on the decline in third world countries and an increase in luxury crop for export to the rich countries. The net result is a rise in world food production at one pole and ever increasing hunger at the other end. This is the paradox of the capitalist system.



Dr. Venkat

So all problems of life and living have to be considered in this context. That included agriculture. The point I am trying to emphasize is that the capitalist economic system runs counter to any rational agriculture. This applies to organic farming too, within this system.

As a tactic, organic farmer per se does not challenge and confront the systemic nature of corporate agricultural and capitalist economics as a whole. A true and complete transformation of an agriculture that banishes hunger, requires a complete transformation of society as it prevails today. Like wise all attempts to create a humane, just and ecologically rational society of the future will have to embrace the movement for organic farming. For, a rational and humane society can only be organic, through and through.

CA: Considering the fact that more and more farmers are shifting to organic farming how do we keep it going?

V: There can be no doubt that organic farming does open out new avenues to mitigate the day to day problems of farmers. If enough farmers organize to take control of local resources, a local or even regional food production and distribution system becomes possible. To that extent such farmers, in a sense would have withdrawn from the current system.

CA: Can you detail some strategy towards this end?

V: I am glad you have raised this problem. Let me try to elaborate on this. Activists must help people confront immediate day to day problems of their lives.

The Agricultural sector has got to be the mainstay for the economic well-being of any nation. In India, it is the mainstay.

It provides over 65% of occupational opportunities to her population. According to the FAO, the population dependent on agricultural in our country was about 55.74 crores of the work force in 2000. It is projected to increase to 57.80 crorers by 2010.

In our country 70% of the cultivable area falls in the dry, semi-arid region. Of them 80% of land-holding are of small and marginal farmers. Over 60% of these have their land-holding in the dry regions. Millions of our people (farmers and land-less labourers) inhabit these regions and depend for their livelihood on the farming in these regions. The only farming that can be done here is rain-fed agriculture.

In this landscape, what needs to be encouraged is small peasant farming systems, and not market-oriented, industrial, chemical agriculture. As a matter of fact, any alternative agriculture has to ensure increased productivity with a very significant and palpable reduction in the costs of inputs needed for agriculture.

The only model with a potential to end rural poverty, feed everyone, protect the environment and maintain productivity of the land for future generations also, is a viable and reproductive small scale farming based upon the principles of agro ecology. But what is needed, is the very thing that is being attempted to be destroyed by the reforms under the process of globalization of the market economy through the WTO.

While many are the forms of the destructive policies of the globalization of the market, the most destructive one is the aspect of displacement of vast numbers of the population from their immediate environment and their means of livelihood. This is particularly going to be so with regard to the small/marginal farmers of the dry lands.

PERMACULTURE ASSOCIATION OF INDIA

C/o Deccan Development Society, 101, Kishan Residency, Door No.1-11-242/1, Street No. 5, Begumpet, Hyderabad - 500 016. Phone: 040-27766295, Email: permaindia@gmail.com

K.Suresh, C/o Wassan, 12-13-452, St.No.1, Tarnaka, Secunderabad - 500 015. Tel: 040-27015295 / 96, cell: 09440804860).

Web: www.permacultureactivist.net is a comprehensive website with a global directory on permaculture.

The Permaculture Association of India (PAI) was founded in 1990, Dr. Venkat being its mentor and founder secretary. Central to PAI's objectives is the attitudinal relationships humans should have with the natural world. At the practical level, PAI aims at establishing productive systems that do not deplete, degrade, pollute and destroy natural resources. PAI's priorities at present are to reorganise, re-structure and regenerate our agricultural system on a sustainable basis and obtain a greater degree of food security at the local level.

To this end PAI is helping 12 small and marginal farmers to establish permaculture farms on their waste lands. All these farms are in Medak district of Andra Pradesh. PAI does not provide assistance to the farmers either in cash or kind, but provides free technical advice on how best to manage the farms. A sister concern, Deccan Development Society (DDS), supports these farmers by providing necessary saplings, seeds etc. PAI's plans include setting up of demonstration farms in all the three regions of Andhra Pradesh i.e. coastal Andhra Pradesh, Rayalaseema and Telangana.

Presently, PAI manages DDS's permaculture demonstration farm in Pastapur village, near Zaheerabad. It is also involved in three research projects conducted by DDS viz. 'Economics of Ecological Agriculture,' 'Bt Cotton,' and 'Farmers' Perception of Agrobiodiversity'. Besides these field based activities, PAI publishes a magazine Gaddiparaka, maintains a library with information on alternate agricultural practices and volunteers its services for OFAI related activities.

Dr Venkat's Garden

The home and garden of Dr Venkat are not only a source of inspiration to visitors but the man himself is a gentle guru with the clarity of philosophy that comes with deep engagement in a matter of interest.

Dr. Venkat, now 86, frail but sharp, like the true 'earth-carer', is happy to show you round the small home garden that he maintains and which doubles as a demonstration plot for the many visitors who drop by to discuss the tenets, principles, practices and philosophy of permanent agriculture, popularly known as 'permaculture'.

All things here are connected and all woven into the fine web of cycle and recycle. The garden itself is a wealth of rich dark humus - soft and crumbly to the touch. A handful picked from any part reveals the densest population of healthy earthworms - seldom seen elsewhere.

Fruit trees, vegetable shrubs, vines, medicinal herbs and trees that provide good leaf litter for mulch are all part of the gardenscape.

A few interesting features are the vertical mulch – nothing fancy, but heads of used brooms stuck all around the garden to aerate the soil – allowed to degenerate naturally in good time. Half buried earthen pots and unused water filters double up as slow water dispensers during the hot months of water scarcity, Bird baths attract feathered pest controllers. The barter? A refreshing bath and juicy grubs! Vines and creepers that one would normally train on a trellis – to maximize on space – grow vertically here on string props. No visible pests here, only the gentle buzz of bees and the silent flutter of butterflies.

All biodegrables including the dust collected from indoors is added to the open compost heaps that abound with nature's Cinderellas going about their business of devouring and processing in a shady corner of the garden.

A discrete board at the gate states simply – 'Permaculture'.

The man and his garden have been a source of inspiration for organic farmers for decades. If you have a problem in farming or a query about anything else, he has a fairly good answer. Never assertive, but like a good scientist, what he tells will be most probably correct.

(Source: Visit by Nyla Coelho)

Organic Farms

CHALASANI DUTT

Sasikala, Prajasaktinagar, Vijayawada - 520 010, Andhra
Pradesh. Phone: 0866-2473246 (R), M: 09393473246,
Email: duttchiasani@hotmail.com

Chalasani Dutt's farm extends over 120 acres. He has been using organic farming methods since 1995. His plantations are located at Nuzvid and Vattigudipada.

He adopts a multi-crop pattern with diverse crops to attain sustainability. Vermiculture and apiculture are extensively introduced to aid productivity.

On his 100-acre Nuzvid plantation, 2000 guava, 2500 coconut, 600 chickoo, 2000 mango trees of various species are intercropped. He has planted 5000 teak saplings all over the farm and also introduced drumsticks of high yielding variety. Dutt also cultivates commercial crops like rice, cashew, groundnut, ginger, turmeric, watermelon, papaya, banana, chilly and host of vegetables. A 2.5 acre lake on the farm has been used to develop pisciculture.

On his 20 acres Vattigudipadu plantation, Dutt has intercropped 1050 coconut palms of a wide variety with 7500 cocoa plants in the 'twin row' system. Compatible plants like areca nut and custard apple have been introduced in the available vacant spaces. He has also introduced commercial crops like ginger, black pepper, garlic and yam. 1000 teak saplings are planted around the perimeter.

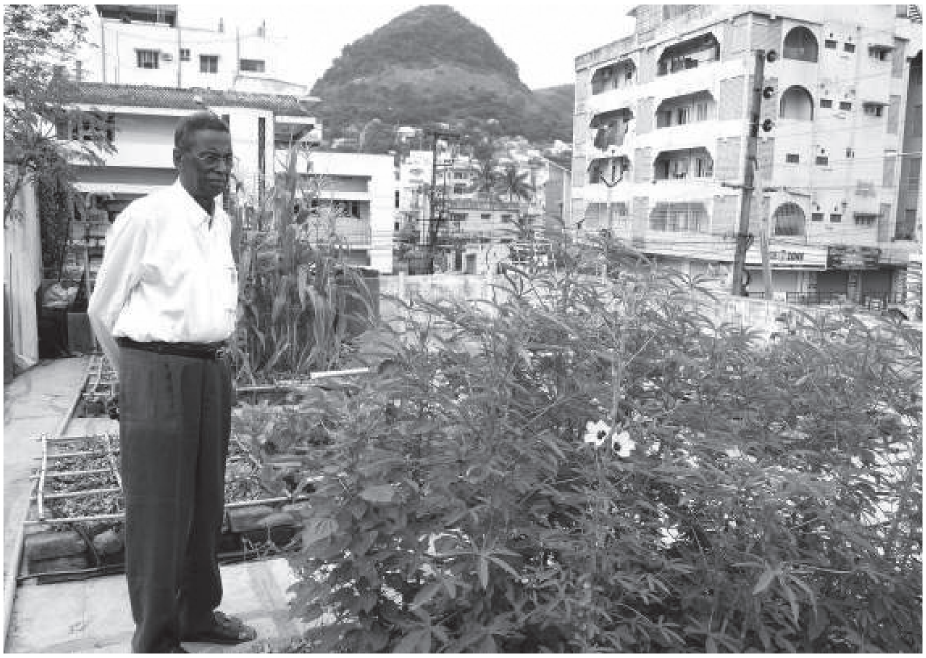
Cattle, goats and poultry are reared on the farm. They naturally adapt to the surroundings and roam free around the farm, thereby automatically manureing the trees. Cow urine is sprayed on the trees as a pest control measure. Poultry birds are effective insect destroyers, while also providing good manure. Coir-pith, which is a waste product in many coconut industries, is spread under the soil in the basins of the trees to provide valuable natural potash. Coir-pith also possesses the additional quality of having good moisture retention properties.

Bio dynamic preparations, BD 500, CPP and 501 are produced in large quantities, surplus is supplied to sugarcane farmers totaling to usage on 4000 acres. Comparative experimentation has shown an additional yield of 8 to 10 metric tones per acre.

Vermicompost is produced on a large scale and Dutt is able to supply this manure to other farmers as well. Liberal dosages of farm yard manure (FYM) are mulched in the tree basins together with all the organic matter (weeds, coconut leaves, coconut husk, coconut shells and cocoa leaves) available on the farm. Neem cake is used as additional input. Vermiwash mixed with neem oil and garlic extract is periodically sprayed to control pests. Marigold plants which abound in the farm aid in nematode control. Honeybees (apiculture) also inhabit the farm and help in cross-pollination, thus boosting yield. The pollen of these bees is another excellent inducer of useful bacteria. The fish pond abounds in plankton, which is a very nutritious food for the fish. A common practice among those practicing pisciculture is to introduce FYM into the fishpond. The FYM produces anaerobic reaction, thereby reducing the

Chalasani Dutt: Terrace-based organic farming

Square feet gardening has been introduced on a roof top in 256 sq feet (each 1 sq feet demarcation made with plastic tube frames) with a bed depth of 6 inches consisting of aerobic compost mixed with vermiculite and coconut pith. The bed is built with 48 clay bricks which automatically form 16 sq ft beds. We have planted various leafy vegetables like Bendi, egg plants, beans, red gram, sweet corn, epic corn, In addition to creeper vegetables like gourds. The yield is ready for harvest in less than 2 months. The miracle is possible because of aerobic bio-dynamic composting. The entire area is watered by drip system and'flow form' equipment. The 200 lts of water conventionally potentised in 15 minutes in the flow form is now done within 6 minutes. The yield is excellent; there are no detrimental pests or weeds. Only, pressing of compost after first harvest is necessary. By this method 20% of area is sufficient to produce 100% yield without soil and with limited water. (Source: Communication with OIP)



Chalasani Dutt on his terrace garden. Seen growing are a mixed crop of maize, papaya, okra, gourds, beans, etc.

oxygen availability. In contrast, vermicompost, which has a neutral pH, enhances oxygen availability.

Dutt has introduced cost effective bio pesticides made from resources available on the farm. Leaves of neem, tulasi, aswhagandha, seetaphal, anrognathis, panicveta, Dhatura/thorn apple, nuxmomica, madhar (calotrpis) are first soaked in boiling water, then filtered and mixed with 150 litres of water, 10 litres of cow urine, 25 litres of vermiwash and 15 litres of biopesticide. This is used as a foliar spray. It gives good results. In 2003, he sprayed 500 litres of cow milk on mangoes with excellent results.

Dutt firmly believes that 'organic' is the best way to live, for our health, for our children, for our planet and for the future. (Source: Communication with OIP.)

STRAINATA

5-58, Kasba Road, Katakeri, Kohir - 502 210, Andhra Pradesh. Phone: 08451-289904,
Email: akach_2000@yahoo.com
(Contact: Asha Kachhru, B.Susheela, B. Pandu)

Strainata is a Sanskrit word meaning multiplication of female culture and female energy. Strainata is a small NGO, coordinated by an urban woman and a rural family together. Our aim is to show that if privileged urbanites devote some of their time and energy to rural communities, then even without big funds from western donor agencies, the rural poor can attain some qualitative change in their lives.

We promote organic agriculture both as an alternative lifestyle for urban-ites as well as a sustainable alternative for the rural folk. For everyone, this means healthy food.

We now have 15 years of experience in organic agriculture and rural women's development, working with women from 3 villages, Ranjole, Bidaikanna and Kohir, all in Medak district, Andhra Pradesh.

We have 7 acres of black soil land, 2 oxen, and a bullock-cart for our agricultural work and a simple old rural house. This old house is also our office and meeting place for the rural women. We have tried out no tilling as per Fukuoka, then tilling with tractor and bullock-cart and now we are mostly tilling with the oxen and only rarely with the tractor. We have gathered experience with both rain-fed as well as irrigated land in Medak district. We produce both sustenance as well as cash crops.

We have grown cereals, pulses, oilseeds, sugarcane, ginger, turmeric, potatoes, maize, bananas and guavas, besides vegetables for our daily use. We have sold organic jaggery, pulses, sorghum (janwari), wheat, safflower oil and turmeric powder to Green shops and progressive groups in Delhi (Navdanya), Bombay (Kavita Mukhi and Vijaya Venkat), Bangalore (Econet and Vanaja Ramprasad), Madurai (Asha hospital and Ritamma David) etc. Our major earnings come from the sale of organic jaggery and safflower oil. Due to drought related and ecological problems as well as problems with some pests like aphids and caterpillars, we are not able to sell these items lately.

We use only organic manure and have mostly avoided pesticides and chemical fertilizers. However despite the use of neem oil, detergent powder, chili powder and some fungi cultures obtained from ICRISAT we have not got more than approx. 3 bags (each a quintal) per acre. In fact neither the expertise of Krishi Vigyan Kendra (in our vicinity) nor that of ICRISAT has been of much use to us. It is the expertise of the local indigenous peoples and small farmers that has helped us proceed further. But even these farmers need training in modern techniques, which is not easily available.

Due to high costs of organic manure and increasing labour costs, we cannot say that we have a positive cost-benefit ratio. But it is a great joy to be able to eat self-produced, healthy food. Besides we are contributing to empowerment of rural poor, particularly the women and children.

One of our strengths has been the emphasis on the social dimensions of organic agriculture. We now have around 150 women organised in self-help groups and they are able to handle on their own, loans from various sources like the IRDP/DRDA and cooperative societies of the Indian government. We have also arranged for animals and land for some of these women to make them self-reliant.

We see the non-existence of agricultural extension services and non-availability of subsidies as the major obstacles to organic farming. Also, the low prices for the better and healthier organic produce are de-motivating factors for many potential organic farmers in our area.

After 15 years of our own experience with organic agriculture, we are now in a better position to represent rural women and men's issues in various fora at regional, national and international level. We are part of various networks of organic movements including OFAI, IFOAM and World Social Forum (WSF).

Since we believe that 'personal is political' we have not hesitated to document our personal joys and travails, besides many social and political issues concerning rural women/men and children. We periodically send out newsletters to friends and well-wishers all over the world. This has enabled us to get support and raise funds from friends, and the need for big donor agency funds, which require detailed reporting and accounting, has been avoided.

We feel a lot more needs to be done to promote the organic movement in India.

(Source: Communication with OIP)

VIJAYA RAMA RAJU

c/o Bharatiya Kisan Sangh, 2-2-1118/3/6, Lingalagadda, New Nallakunta, Hyderabad - 500 044, Andhra Pradesh.

Vijaya Rama Raju is one of the state's vice presidents of the Bharatiya Kisan Sangh. He belongs to Tetali village near Tanuku of West Godavari District. He comes from a farmer's family and has been actively involved in cultivation for the last 25 years. He shifted to natural farming six years ago.

Five years ago, one acre of land was brought under natural farming. The soil was tilled with six cartloads of dung and leaves of green gram (*pilli pesara* in Telugu). Later on, the land was prepared for transplantation. Rice seed MTU 7029 has been used for the last three years and has given a good yield of 32 bags. He also used MTU 1001 which resulted in an equally good yield of 32 bags. He does not use fertilisers or pesticides. He thus saved Rs 1500 per acre.

In bidding good bye to pesticides and the hole-in-the-pocket fertilisers, the ground was automatically ready to welcome the farmers' friends like earthworms, frogs and myriad birds. The earth retained its minerals and the land's power of resistance increased. Raju is pleased to now have healthy rice for consumption and healthy grass for his animals. He has saved expenditure on pesticides, fertilizers and no longer needs to ask for loans.
(Source: K. Vidhyasagar Rao, Bharatiya Kisan Sangh, 1995)

TIMBAKTU COLLECTIVE

Chennekothapalli Village - 515 101, Anantapur District,
Andhra Pradesh.
Tele: 08559-202149, 202335, 202339.
Email: info@timbaktu.org / timbaktu.collective@gmail.com
Website: www.timbaktu.org

It all began in 1990 when a group of like minded people who had been working in the development sector for over ten years got together and bought 32 acres of degraded wasteland in the remote villages of chronically drought hit Anantapur district, in the Rayalaseema region of Andhra Pradesh. The intention was to work towards restoring the land, experiment with alternative lifestyles, explore soil and water conservation techniques as well as alternatives in energy, horticulture and agriculture. Today 'Timbaktu' as it has been named ('the last horizon – where the earth meets the sky') is an agro forest habitat. Here along with its own land the community has been involved in protecting and helping regenerate 700 acres of dry deciduous forest on the surrounding hills by reducing overgrazing, stopping tree felling, fires etc.

From Timbaktu was born a voluntary organization, Timbaktu Collective, with the objective of working for the sustainable development of villages in the region. Eighteen years later the Collective works in 140 villages of Chennekothapalli, Roddam and Ramagiri mandals serving about 10,000 families.

'Kalpavalli' (the benevolent mother) project evolved as an organic extension of the Timbaktu experiment in eco-restoration through natural regeneration. It has twin aims of helping the villagers protect and develop the natural resources of the village and of enabling the poor to improve their precarious livelihoods.

This experiment started in 1993 on 150 acres in the village of Mustikovila. Since then 8 other villages have joined the project to protect and regenerate 12,500 acres of revenue waste land into a forested wilderness. Kalpavalli as this wilderness is called, now houses over 300 indigenous tree, bush and grass species, a perennial stream, hundreds of bird species and herds of black buck. Over 25,000 sheep and 6,000 cattle graze here through the year other than the 5,000 cart loads of grass that is taken away by the local villagers. Investment in this project has been less than Rs. 500 per acre.

The protection work is taken up by Vana Samrakshana (Forest Protection) Committees (VSCs) and their federation with support from the Collective. The VSCs plan, implement and monitor activities in Kalpavalli. 180 members including 60 women representing the General Body of the Kalpavalli Adavi Samakhya federation of the VSCs have, as of the 30th March 2008, been registered as 'The Kalpavalli Mutually Aided Tree Growers Cooperative' under the MACS Act.

Children from Timbuktu Collective harvesting organic vegetables

Natural Resource Management has been one of the core areas of work of the Collective since 1992. The Collective has completed a total of thirteen watersheds under the GoAP's APRLP programme. 156 traditional water bodies have been renovated, as well as soil and water conservation and soil fertility works undertaken in over 10,000 acres of agricultural land. This has resulted in the recharge of a number of bore and open wells. Awareness building on the importance of maintenance of these water bodies is an integral part of the work.

In July, 2001 a Seeds of Hope project was initiated with the goal of conserving agro-biodiversity and strengthening sustainable agriculture, while simultaneously combating drought. Working in cooperation with farmers the project has focused on the production and promotion of minor millets, the SRI method of paddy cultivation, the use of non chemical pest control and fertilisers, understanding crop economics of ground nut and millets, while planning long term strategies and diversification of cropping patterns.

Encouraged by the results of the Seeds of Hope project and supported by the alternative banking for women programme, a project known as 'Timbaktu Organic' was initiated in 2005. The objective of this venture is to enhance the income and food security of dry land smallholder farmers. In the long term it hopes to improve their livelihood security through sustainable agriculture methods and added marketing support. Farming, production and marketing are distinct components of the project.

The Timbaktu Organic team works through organic farming sanghas with a total strength of 349 farmers. The Sanghas anchor the organic farming work including activities such as farmer and field selection, training, organic inputs, mobilisation, documentation of organic practices adopted and mid and end season review. The farmers are presently producing groundnut, redgram and a variety of millets. The collective is a member of the Participatory Guarantee System (PGS) Organic India National Council and follows the PGS method of organic certification. Of the 349 farming families, 317 were granted certification for 1149 acres and this year 540 have applied.

The 'Dharani Sendriya Vyvsaya Sanghalu Samakhya' (Dharani organic farmers' federation), formed in May 2006 to monitor the work is now registered under the MACS Act as the Dharani FaM CooP Ltd. The Directors of Dharani FaM CooP Ltd manage the procurement, processing and marketing activity.

The Dharani processing unit was inaugurated on 7th July 2007. Dharani deals with 15 agro-commodities processed by a groundnut decorticator, a flour mill, two oil rotaries and a filter press. It also has a seed collection centre, where a wide variety of indigenous seeds of grasses, bushes, trees and crops have been collected and stored.

Timbaktu Organic's work is supported through farmer-member's contributions, investment by Adisakthi MACS, loans from friends and grants.

To promote and popularize consumption of millets locally, millet food demonstrations and workshops are organized. A restaurant that sells organic prepared food has been set up and is doing well. For the urban markets stalls were set up at the India Organic fair and the Civil Society Summit held in various cities of India. Timbaktu Organic products now sell in villages of Anantapur District and urban centres like Anantapur, Putaparthy, Auroville, Pondicherry, Bangalore, Chennai, Hyderabad and New Delhi.

The Collective, in partnership with all the CBOs it has promoted over the years, has been celebrating the International Environment Day on June 5th and 6th since 1998. Indigenous varieties of seeds, poultry and cattle collected from all over the area are exhibited. Traditional implements used for agriculture, fishing and hunting are displayed. Performances and competitions in various traditional art forms and weight lifting takes place. Local food items and various handicrafts are sold. Presentations made by local villagers as well as invitees highlight issues such as cultural and agricultural biodiversity, organic farming, seed protection, forest protection, etc.

(Source: Timbaktu Collective's communication with OIP)

DECCAN DEVELOPMENT SOCIETY

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Email: ddshyderabad@gmail.com
Website: www.ddsindia.com

Deccan Development Society (DDS) is a two-decade old grassroots organization working in about 75 villages around Zaheerabad in Medak District and networking with various organizations in the State of Andhra Pradesh. Achieving community sovereignty is the primary mission of DDS. Since we work with the very vulnerable sections of rural communities viz., women and dalits, we believe that the greater the community sovereignty that they achieve higher their chances of survival.

Over a period of 25 years, the DDS programmes have evolved from meeting the simple sustenance needs of the sangham members to empowering them in order to address the larger issues of food security, natural resource enhancement, education and health needs of the region. The integration of various activities is intended to retrieve women's natural leadership positions in their communities, and to fight the lack of access and control over their own resources. These activities, alongside ensuring earth care, are also resulting in human care by giving the women a new-found dignity and profile in their village communities.

Autonomous Communities

At the heart of all these activities is the fundamental principle of access and control, which leads to the issue of autonomy of local communities. The autonomy becomes far more important in a globalising world, shrinking national boundaries, and disappearing national sovereignties. In this context, it becomes crucial for local communities to take over certain spheres of autonomies to protect themselves from being walked over by the unseen globalising forces. It is in this scenario that the women of the DDS sanghams have worked towards the following autonomies:

Autonomy over food production

Autonomy over seeds

Autonomy over natural resources and their management

Autonomous market

Autonomous media

Responding to the emerging global challenges, the DDS communities, which had worked towards ensuring their food security over the last 25 years, are now moved into a regime of food sovereignty.

The DDS also runs Krishi Vigyan Kendra in Medak District which promotes organic farming and environment friendly techniques based on local knowledge systems. Its other activities include: an Alternative Public Distribution System, Pachasaale - The Green School.

The DDS is the State Secretariat for the Organic Farming Association of India (OFAI).

SOCIETY FOR ORGANIC AGRICULTURE

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Andhra Pradesh.
(Contact: Bhanu Sanghani)

Society for Organic Agriculture (SOA) is a not-for-profit NGO dedicated to the promotion of organic agriculture. It was established by a few concerned individuals, some of whom are retired agricultural experts, business managers and administrators from the government. Its multiphase programmes include the following:

– Establishing an information package of traditional agricultural practices in various parts of India based on folklore and interviews with farmers.

– Scrutinising these traditional agricultural practices in a scientific manner by selective field trials in various parts of the country in association with like minded organizations.

– Building awareness and popularising the concepts of organic agriculture.

– Assisting farmers to channelise their organic produce by opting for certification either on their own or through a marketing agency, for domestic as well as foreign markets.

The small organic farmers of Medak District

The organic farmers of Jharasanga, Zaheerabad, Nylakal and Raikode Mandals of Medak District are mostly women with small family land holdings of half to four acres of land. They practice rainfed dryland agriculture on red, regadi, garubu soils. The major crop are a variety of small millets, jowar, pulses and some chili, turmeric, fruit and flowers.

Most families keep cows, buffalo, goat and chickens. Excess milk and crops are sold in the local mandal markets. The entire household including children work on the farm. Some men folk may at times seek employment outside as daily wage earners. Many have now started to send their children to school and express this fact with a sense of pride. They have organized themselves well as a cooperative, have a millet public distribution system, an organic certification system and also run a community radio.

Some of the millet and legume crops grown are Sai Jonna (white jowar), Pacha Jonna (yellow jowar), Sajja (Bajra, Pearl millet), Korra (Foxtail millet),Taida (Ragi, Finger millet),Chanaga Pappu(Bengal gram dal,),Togari Pappu (Pigeonpea), Pesara Pappu(Green gram),Minupa Pappu (Black gram),Uluva (Horsegram).Apart from the above there is a vast sub diversity within each of the millets and legumes grown. Some of them listed below village and mandal-wise

MANDAL RAIKODE

Village Rejintal

Mollamma w/o Esappa

Manemma w/o Asappa

Ramulamma w/o Salmon

Suseelamma w/o Pentappa

Sakuntalamma w/o Sanju

Village Hulgera

Sangappa

Narsamma & Narsappa

MANDAL NYLAKAL

Village Humnapur

Begari Laxmamma w/o Balaiah

Begari Nagamani w/o Galeppa

Kamugonda Punyamma w/o Govindu

Begari Kaushamma w/o Ojappa

Village Shamshoddinpur

Baloji Hanumanthu s/o Sangappa

Organic Farming Association of India (OFAI)
2nd Biennial Convention
ORGANIC SEEDS
பாரம்பரிய விதை திருவிழா
18 & 19 October, 2008
Tiruchirappalli, Tamil Nadu

Women organic farmers of Medak district are always at the forefront of OFAI events. Above, they lead the singing at OFAI's biennial convention on organic seeds.

Village Malgi

Raikode Satyamma w/o Vittal Reddy

Village Tekur

Begari Indramma w/o Maneppa

Begari Madevamma w/o Sanjeev

Begari Chandramma w/o Shivappa

Begari Sangamma w/o Chandrappa

Pundikura Bujjamma w/o Shankar

Dudekula Sukrabhi w/o Mogulansab

Dudekula Halimabhi w/o Mahaboosab

Pundikura Vittal s/o Gangappa

Gaddameedi Hanumamma w/o Siddappa

MANDAL JHARASANGA

Village Bidakanne

Begari Paramma w/o Sangappa

Begari Ratnamma w/o Siddappa

Moligeri Rangamma w/o Maneppa

Begari Aasamma w/o Ramulu

Vimalamma w/o Narsappa

Narayana

Vimalamma w/o Narsappa

Moligeri Chandramma

Village Ippapalli

Kamalamma w/o Chakrappa

Rasamma w/o Jagannath

Tejamma w/o Chandrappa

Manemma w/o Pentappa

Ramappa s/o Hanumappa

Satyamma w/o Ramulu

MANDAL ZAHEERABAD

Village Pastapur

Chilkapalli Laxmaiah s/o Nagappa

Raikode Laxmamma w/o Mogulappa

Village Raipalli

Mytari Kamalamma w/o Ambappa

Gollala Ramulamma w/o Papanna

Idala Suseelamma w/o Srinivas

Village Hoti-B

Chevana Kamalamma w/o Narayana

Rajamma w/o Madaiah

Shamamma w/o Chandraiah

Village Bardhipur

Erolla Jayappa

Village Raghavapur

Shadul Saeb

K. NIMMAIAH

Near S.L.N.S. Degree College, Bhongir - 508 116, District Nalgonda, Andhra Pradesh. Phone: 08685-242042, 08685-243646

K. Nimmaiah owns a five acre farm which is located in Marrigudour village, Nalagonda. He has been farming for the past 15 years. He grows paddy, pulses and mangoes. He uses old seeds in order to get a high yield. Nimmaiah says that organic farming is not difficult, however one requires patience and perseverance.

When he changed from chemical farming to organic farming, for the first two years there was a reduction in the output. He overcame this hurdle with the application of farm yard manure, vermicompost and green manure. Bio-pesticides like neem seed kernel, neem oil were used to control pests. He continues to use these natural manures and bio-pesticides to maintain good yields.

He believes that people are yet to realise the importance of organically produced food and acknowledge it for its better taste, flavour and nutrient value. Organic farming puts one in a win-win situation as the product is good for health and at the same time the fertility of the soil is retained. Consumers should be prepared to pay a little more for quality food products that are produced using organic farming methods, says Nimmaiah.

(Source: Communication with OIP)

SANGAPPA MARUGODDI

Hulgera Village, Raikode, Medak District, Andhra Pradesh.

Sangappa Marugoddi and his family have been practicing organic farming for the last 60 years on their four acre farm. They cultivate about 26 varieties of crops including sorghum, little millet, foxtail millet, bajra, dry paddy, horse gram, red gram, cow pea, field beans etc.

Farm yard manure and vermicompost are used to enhance soil quality. This makes the soil soft and also yields good fodder for animals. Old seeds are used for sowing. Sangappa believes that it is not difficult to practice organic as surplus produce is sold to Deccan Development Society in Pastapur. He is happy that six of his neighbours also practise organic farming on contiguous pieces of land adjacent to his.

(Source: Communication with OIP)

UMA SHANKARI

Vil.Venkatrama Puram, P.O. Vallivedu, (via) Damal Cheruvu - 517152, District Chittoor, Andhra Pradesh. Phone: 08585-249338, Email: gorrepatinaren@yahoo.com / umanarendranath@yahoo.co.in

The farm is located approx. 50 kms from Tirupati town, Andhra Pradesh. It is a joint property of 30 acres, comprising two plots of land on both sides of the village, and is presently owned by three brothers. G. Narendranath and Uma Shankari were the caretakers till Narendranath expired a few months ago (2009).

On the approx. 20 acres single plot there are 400 mango trees that are about 100 years old and 250 coconut trees. The second plot is four contiguous bits of land used as follows:

i. Two acres of coconut cum mango garden
ii. Two acres of mango garden
iii. Two and half acres of wet land
iv. One acre of dry land.

Both Narendranath and Uma Shankari came from farming families, but like most educated Indians they found themselves working and living in the city. They have been inspired by Marx, Mao and Gandhi and influenced in their thinking by critiques of modern science and technology, the environment movement, and of course Fukuoka.

In 1987 they decided to relocate to their ancestral village, hoping to live an environment-friendly life and to do grass roots 'public' work.

When they started this new life, both of them were new to farming.

Commenting on her experience with organic farming, Smt. Uma Shankari says: 'We are not hard-working farmers, but are 'hardly working' farmers. Our own role in farming is largely supervisory. The biggest drawback for us is that we are involved in work other than farming, like research in agriculture and water issues, building grassroot movements of farmers and dalits, taking up human rights issues etc. hence our inability to give enough attention to the farm. We feel organic farming is the right thing to do and wish to put more effort into integrating our lives with it.

'In our opinion it is incorrect to compare yields from chemical farming with those of organic farming, because these yields have been obtained through perpetuating gross violence on nature. The yield from chemical farming which is several times more than what natural farming can offer is nothing but human greed at the cost of having lost significant biodiversity and gene pools for ever. But farmers cannot be blamed for this state of affairs; low prices for farm produce and poverty drive them to look for shortcuts. The globalization process led by governments in collaboration with the MNCs has worsened the plight of farmers all over the world and small farmers suffer the most. There is a need to organize and fight this double violence on nature and fellow human beings. For us the green and the red movements are the same.'

(Source: Communication with OIP)

P. SHASHIDHAR PATEL

At Raikode, (mdl), Medak District - 502 257, Andhra Pradesh.

Shashidhar Patel's farm is four hectares. Jowar, capsicum, pesicular mango, different grains, korra and some varieties of grass grow on his farm. He keeps bullocks on the farm. Pests are controlled using neem oil. In his experience practising organic farming has reduced the expenditure incurred on the farm apart from which it is pollution free. He sells his produce in the local market but is not satisfied with the price. He feels that since the yield from chemical farming is more than that obtained from organic farming, the produce of organic farming should fetch higher prices.

(Source: Communication with OIP)

M. TUKARAM

Basanthapur, Mandal-Nayalakal, District Medak - 502 249,
Andhra Pradesh.

M.Tukaram belongs to a farming family and has been practising organic farming for over 45 years. He has a five acre farm, located in Basanthapur. Cereals, pulses, millets, vegetables, ginger, sugarcane etc. are cultivated on the farm. He rears cows, sheep, goats, buffaloes on the farm and uses the dung and urine for producing organic manure.

His farm is protected from pests by spraying jaggery solution, tobacco solution and neem seeds solution. These act as insecticides and germicides. He also periodically lights a fire in an extreme corner of his field, away from the currently growing crops. Since light attracts insects, this exercise facilitates moving the insects away from crops.

He claims that everybody in his village practises organic farming, even though it requires great will and discipline. He says that the food his ancestors cultivated and consumed was good for health as it was grown using organic methods.

(Source: Communication with OIP)

DAMMARI NARASAICH

S/o D. Sangaich, Jeerlapally P.O., Jharasanagam Md. - 502
236, Zaheerabad T9, Medak District, Andhra Pradesh.

For over 20 years Dammari Narasaich has been practising organic farming in Jeerlapally, along with his family. He has two separate farms, of around one and half acres each. He claims that everybody in his village practises organic farming.

He grows green gram, yellow jowar, tur dal, korralu, minumulu, pebbarlu, pundlu, pigeon pea, green chilies, coriander, bottle gourd, tomatoes, brinjal, culviber, green leafy vegetables, anisl etc. on both his farms. The produce is partly consumed and excess is sold in the local market. Cows and goats are reared for meeting the manure requirements of organic farming.

He says that organic farming is good as there are minimum pests, waste generated is less, the strength of the crops is more and so is the return from the produce. Fields if left uncultivated for a season do not lose their fertility and nutrient value. More importantly he does not have to spend on purchase of chemicals and pesticides.

(Source: Communication with OIP)

R.MURALI

Secretary, Modern Architects for Rural India (MARI) #1-8-
499, Behind Ekasila Park, Balasamudram, Hanamkonda-506
001 Andhra Pradesh. Phone: +91-0870- 2552928/ 2571208,
Email: marimail@rediffmail.com, mariwgl@sancharnet.in

Shri Murali's one and a half acre farm is located close to his residence in Gopanapalli, Andhra Pradesh. He belongs to a farming family and is involved in agricultural activity for the past 15 years. Since he started farming, he has been growing cotton on one acre of land and cultivating turmeric, maize and groundnut in rotation on the other half acre.

He admits to not always being a pure organic farmer but, for the past eight years he has been relying on non-chemical methods (NPM) to deal with pests. Prior to this he was spending Rs. 4000/- per acre on plant protection chemicals. This amounted to 50 percent of his cultivation costs.

Initially when he started practising organic farming he used to spray chemicals along with NPM methods. But at present he is not using any chemicals. Immediately on changing to pure organic, his yield dropped by 20-30 percent but now there is no difference in yield as compared to chemically grown cotton.

During summer the farm is deep ploughed and the field is kept clean and without weeds. Prior to sowing, 20 cartloads of farmyard manure (FYM) per acre is blended into the soil as part of the land preparation process.

Pests are controlled by following all available NPM methods such as spraying NSKE, tobacco leaf extract, NPV, cow dung, cow urine etc. He has also set up bird perches, sown trap crops like castor and marigold and installed light and pheromone traps.

Two quintals of cotton are sold in Warangal market and it fetches the same price as chemically grown cotton. He thinks that to encourage organic farming, separate market channels should be established for organic cotton with some incentive in price.

Only a few farmers in his village are practising organic farming, some are slowly adopting NPM practices while others are still using chemicals. As a result there is a drift effect of chemicals. Insufficient livestock, small holdings, no price advantages to the organic farmers and lack of interest in farming are some of the difficulties faced.

The advantages of organic farming according to him are getting high returns with low expenditure and less risk. Also, the environment, soil and humans are free from poisoning. However organic methods need patience, technical know-how and are labour intensive. Practicing organic farming can come from a deep love and respect for mother earth. There is an urgent need to explain to all the farmers the long term effects of using poisonous chemicals in agriculture, and the relevance of organic farming to human life.

(Source: Communication with OIP)

CENTRE FOR SUSTAINABLE AGRICULTURE

12-13-445, Street No. 1, Tarnaka, Secunderabad - 500 017,
Andhra Pradesh. Phone: 040-27017735, Email: csa@csa-india.org Webe: www.csa-india.org,

CSA Call Centre for Organic Practices and Foods: 040-6526 8303

Contact: Dr. G. V. Ramanjaneyulu

'Human race will reach the organic age or cease to exist' -H. P. Rusch

Centre for Sustainable Agriculture (CSA) is a technology and policy research organisation working with farmers to conserve their resources and their rights. CSA promotes the integration of the knowledge of natural regenerative processes and community skills into food production. CSA is engaged in establishing models of sustainable agriculture working in partnership with NGOs and Community Based Organizations by scaling up the successes and challenging the establishment

Ramanjaneyulu (third from right) with organic seedkeepers

for a policy change. It has technology and expertise in the area of NPM (Non Pesticidal Management) approach to pest management, Sustainable Soil Fertility Management, Non Chemical Disease Management and Seed Production & Management. The necessary technology is made available through interaction with farmer communities, farmer networks and farming experiments at village level. Today there are more than 50 pesticide free and 10 organic villages in the regions of high chemical use.

CSA also works in establishing farmers institutions which help them in planning, producing and directly market to the consumers. Currently, the organization works with 18 farmers cooperatives and a consumer cooperative which also run four organic store outlets (Hyderabad, Jangaon, Bongir and Achampet). In main crops efforts are made to establish seed to final processed produce in the villages in crops like redgram, chillies and cotton. The cooperatives work as a federation and market the produce in the name of Sahaja Aharam. For details http://www.sahajaaharam.in

CSA provided handholding support to the Government of AP for establishing Non Pesticidal Management and institutionalizing in more than 1850 villages covering more than 7 lakh acres across the state benefiting more than 3.5 lakh farmers in 1850 villages during 2004-5 to 2007-08. Today the program is independently run by the Women Self Groups in AP and supported under Rastriya Krishi Vikas Yojana. The remarkable success of this program has attracted wide attention from across the country and the world. The Prime Minister considered this model as a basis for the soon to be launched National Mission on Sustainable Agriculture.

At the policy level CSA's focus is on National and State level policy on Organic Farming, Seeds Regulation Bill and National Seed Policy. Also under its critical scanner are GM crops in India. The campaign against Genetically Modified foods and crops is strongly crusaded by CSA supported by a website, www.indiagminfo.org dedicated exclusively to it.

CSA also maintains a repository of news, data, reports etc on the agrarian crisis across the country which can be accessed at http://www.agrariancrisis.wordpress.com

CSA's own website is a repository of all information one would possibly need to practice sustainable agriculture. Now a new learning portal is being setup at http://www.sustainableagriculture.in

It endeavours to take India towards an 'Organic Age' through the practice of Sustainable Agriculture.

(Source: Communication with OIP)

CHETNA ORGANIC

12-2-417/34, Mohan Nivas, Ushodaya Colony Gudimalkapur, Hyderabad - 500 028, Andhra Pradesh. Ph (fax): 040-2351 1083/ 040-2352 0021

Email: info@indianorganicproducers.org

Web: www.indianorganicproducers.org

Organic Cotton Cultivation

Chetana Organic is an organic cotton growers association working through a consortium of seven NGO's in Andhra Pradesh and Maharashtra. It supports farmers to convert from conventional agriculture to organic and assists them to set up their own Organic Cotton Growers Association (OCGRA).

Organic farmers from villages in Andhra Pradesh and Maharashtra meet every week at Farmer Field Schools in groups of 20. Alumni farmers (Farmer Trainers) train new farmers. Filed days are organised to share experience with neighbouring villages.

Products: Cotton, red gram, green and black gram , bengal gram, soya, maize, rice and chilies.

(Source: Brochure)

GUDIVADA. NAGARATHNAM NAIDU

House No. 8-66, Gautham Nagar colony, Dilsukh Nagar, Hyderabad – 500 060, Andhra Pradesh. Phone No. 040-24063963, Cell: 09440424463.

Gudivada.Nagarathnam Naidu has an 11 acre organic farm on which he cultivates paddy, coconut, floricultural plants, fruits, medicinal plants, etc. He has refined the SRI technique of paddy cultivation and achieved record yields of 16tonnes / hectare in 2005. The yield in 2008 touched 14.9 tonnes/hectare. He holds the second highest record in the world for SRI paddy. The paddy grows to a height of 6'3" (187 cms).

Shri. Nagarathnam started farming in 1990 and converted to fully organic in 1995. He is the first farmer in Andhra Pradesh to adapt the SRI technique. He has been growing paddy using the SRI method on 3 acres of his farm since 2002. Recently he has also adopted the drum seeding method for planting. His record harvests using SRI have attracted many visitors, farmers, national and international dignitaries. He is regularly called for demonstrating his techniques by NGO's and farmer organizations. He claims to have so far trained over 10,000 farmers to adopt SRI in Andhra Pradesh, Tamil Nadu, Karnataka and Orissa.

He practices mixed cropping system and has a range of fruit bearing trees like coconut, papaya, banana, sapota, padam (a fruit like cashew), pulses (red, green and bengal gram), groundnut and caster. He grows vegetables and spices for home consumption. Medicinal plants and floriculture are grown for commercial purposes. Floriculture consist of zerbera, carnations, ornamental red ginger, lady heliconia, hanging heliconia, pad heliconia, golden stock, bird of paradise, golden rods, valuzada (green hanging braid like ornamentals). The farm uses manure made from dung and urine of 10 on farm cattle heads. On an average 10 to 12 people work on the farm everyday including his wife, mother and himself. He is proud to acknowledge the contribution of his mother who at the age of 85 puts in work equivalent to two farm hands. He credits it all to organic healthful food.

His contribution has been acknowledged by the Agro International Award -2006 at Bangladesh, Directorate of Rice Research with Best Rice Farmer Award -2008, Andhra Pradesh Best Farmer Award-2005 and 2008 and ICAR Best Farmer Award-2009.

He spends few days every month travelling to one district in his state to promote organic farming and SRI techniques.

He works on the principle, 'Nothing from outside need be brought into the farm, only produce must go out.'

(Source: Teleinterview with OIP)

GORIPARTHI NARASIMHA RAJU YADAV

Guduru village, Krishna District, Andhra Pradesh

Awards and records are not new to Goriparthi Narasimha Raju Yadav. The 60 year old farmer from Guduru village, Krishna District of Andhra Pradesh was honoured with a Padmashri in 2009, the country's highest civilian award. This is a high boost to the organic farming movement in the country that not only a farmer but an organic one at that has been bestowed this honour.

If one were to list his other awards a few of the well known ones would be Krishaka Ratna, Krishi Ratna, Krishi Samrat, Aani Mutyalu etc. The ICAR awarded him the Jagjivan Ram Kisan Puruskar in 1999 which also carried a cash reward of Rs. 1 lakh.

As for records, they have been set in the production of rice, groundnut and blackgram. The 100-year-old mango tree on his farm made it to the Limca Book of Records in 1996 for yielding 23,456 mangoes.

In the last season, he harvested 42.6 kg of paddy from 25-sq.m. land. When extrapolated, this amounts to a record yield of 6,900 kg per acre or 16,250 kg per hectare.

On the 60 acres of irrigated land, he cultivates a variety of crops that include rice, blackgram, groundnut , coconuts, mangoes, tomatoes and roses apart from which, endeavours in cattle breeding and aquaculture are also visible.

Shri. Yadav had his initial training in farming from his father, whom he used to accompany regularly to the farm as a young boy, follow with keen interest all the on- farm practices, watch and listen carefully to discussions with experts.

He later as a farmer himself perfected organic farming techniques. Management practices such as using the suitable variety of seed, timely sowing, ensuring optimum plant population, balanced nutrition, proper water supply, early control of weeds, pests and diseases were meticulously followed. He has achieved record yields and also demonstrated to farmers that record yields are possible with the use of techniques of organic manure use and multiple cropping.

He is a Member of Committee of Experts, Indian Rice Development Council and has been a Board Member of the Indian Council of Agricultural Research (ICAR).

(Reference: World Wide Web)

CENTRE FOR RESOURCE EDUCATION

201 Maheshwari Complex, Ma-Saab Tank Crossroads, Hyderabad - 500 028, Andhra Pradesh. Fax: 3312891, 6613367, 6621571, Email: bvsr.cre@axcess.net.in, creind@hd2.dot.net.in

The centre is working on watershed development projects, rural development, rural youth counseling, agricultural improvement and rural technology services through a network of small NGOs, and has been collaborating with the government at various levels in training programmes and project implementation.

It has a documentation centre that includes a slide and photo bank available for public access and has assisted in designing environment curriculum for open school systems and conventional schools and universities.

(Source: World Wide Web)

RURAL INTEGRATED DEVELOPMENT SOCIETY (RIDS)

Post Garladinna, Dist.Anantapur, Andhra pradesh-515731
Phone: 08551-286473, Email: appsatp@yahoo.co.in

Contact: V. Kristappa, President.

RIDS is involved in intervention and outreach programmes in the rural areas of Ananthpur district. Four years ago, RIDS adopted Chinna Jalapuram, which today is set on the path of being an organic village. The village leader, Narsimha was the first to make the move towards adapting organic practices, being convinced of its efficacy. At the time, he was grappling with a debt of Rs. 50,000. Slowly the productivity and the balance sheet began to improve. His income has grown five times since.

Today, most of the other farms in the village are in various stages of reclamation with sustainable practices using locally available bio-mass like neem, ingua, thangra and farm generated inputs using cow dung, cow urine, jaggery, domestic degradable waste etc.

Chinna Jalapuram has an environment committee, a seed bank and a microfinance system to invest in farming practices.

More than 10 lakh acres of the land in Andra Pradesh has been declared 'pesticide free zone'. Centre for Sustainable Agriculture (CSA) has been instrumental in connecting organizations like RIDS with the farmers towards grass root level interventions like these.

(Source: Kabir Arora, communication with OIP)

RISHI VALLEY ORGANIC INITIATIVE

Rishi Valley Education Centre – RVEC
Rishi Valley P.O., Madanapalle, Chittoor District,
Andhra Pradesh-517352. India
Tel: (08571) 280622, 280582, 280044
Fax: (08571) 280261
(Contact: Santosh Kumar. santosh@rishivalley.org or Radha Gopalan. radhag@rishivalley.org)

The RVEC, a campus of about 350 acres comprises the Rishi Valley School (RVS) and the Rural Education Centre (REC) of the Krishnamurti Foundation. The Rishi Valley Land Care Project involves the staff, students, and interested visitors in afforestation, water conservation and soil regeneration programmes, besides protection and documentation of the plant, bird, and animal life of the valley.

Organic Farming at Rishi Valley School

Rishi Valley School has been engaged in organic farming on its estate and vegetable garden for several years. The vegetables, fruits and crops are grown organically for consumption by the students and other residents of the school campus.

A total of about 150 acres of land is under cultivation. A brief description of its agricultural activity follows:

Horticulture

We have about 25 acres of mango orchard with no irrigational support. The varieties found in the orchard are Neelam, Benishan(Banganapalle), Malgooba, Rumani, Degar, Peethar, Thothapuri(bengaloora)....etc. There are a few Amla trees (gooseberry) in the orchard which have not been yielding any fruit so far.

The coconut orchard has around 1000 trees located in different areas of the campus. Most of them are either East coast tall or West coast tall varieties. Recently we have planted saplings of Ganga bondam, Malaysian yellow and green dwarf, Lakshadweep yellow and green dwarf varieties.

The campus also has tamarind trees numbering around 500 or more. The sapota orchard has about 900 plants of the Paala variety. Quite many sitaphal plants are found in these orchards and on the bunds of fields. The coconut and sapota orchards are under limited drip irrigation.

Dryland agriculture

We cultivate around 50 acres of land under dryland farming system (rainfed farming).

We grow ragi, red gram, field bean, cow pea, groundnuts, sorghum, horse gram, black gram and dryland paddy.

We grow lemon grass – Cymbopogan citratus in 3 acres of land. This is being purchased by a buyer from Bangalore.

Sugarcane is being cultivated in 2 acres of land using an approach that involves minimal and optimal use of water.The madagascar or SRI method of cultivating paddy is applied here to grow sugarcane. This has been developed by Subash Palekar. Unlike the conventional approach where one uses 3 to 4 tonnes of seed material, here we use only 300 kg of sugarcane as seed material, and, instead of planting sugarcane in sets we cut the sugarcane into pieces that contain one node each. We have grown small onions, chilly, cow pea, radish, ladies finger, cluster bean and tomato as intercrops and have got good harvests too. One has to irrigate all the furrows in the field for the first 3 months. After 3 months stop giving water to the rows containing the sugarcane crop. After 6 months watering is done only in the central furrow between 2 rows of sugarcane. One should not burn the trash (dry leaves) in the field after harvesting sugarcane, it should be used as mulch for the subsequent ratoons.

Making organic jaggery at Rishi Valley

There is a vegetable garden, 12 acres in area, where vegetables are grown for consumption in school.

Livestock

The school has a dairy with 80 Holstein-Fresian cows. The dairy uses 15 acres of land to grow fodder for the cows.

RV has about 20 indigenous cattle (cows & bulls). The urine and dung from these animals is used in the preparation of various bio-pesticidal preparations and also in the preparation of Panchagavya and Jeevamritha. Rishi Valley is involved in conservation of Ongole, Punganur & Hallikaar breeds of indigenous cattle.

Rishi Valley is now a certified organic farm.

Organic Farming Initiative in the Rishi Valley Special Development Area

Agriculture and animal husbandry are the main sources of livelihood of people in this drought prone area. The soil has increasingly lost its productivity due to the employment of chemical based farming. Employing organic farming techniques and practices is the most effective way to protect and conserve the soil and water resources in the area while ensuring sustainable and inclusive growth and development of the community.

The Rishi Valley School has therefore embarked on a project – the Rishi Valley Organic Farming Initiative (RVOI).

Based on the in-house experience in organic farming and a long standing relationship with the surrounding community the school embarked on a programme to help the surrounding farmers to convert from chemical based to organic farming. To assist in the preparation of this programme, the Rishi Valley School invited Dr. Sultan Ismail and Dr. Claude Alvares of the Organic Farming Association of India (OFAI) in August 2008 to visit the area, interact with the farmers and provide guidance. Following a visit to several fields in the valley and meetings with groups of farmers, recommendations were provided to the school.

The visit by Drs. Ismail and Alvares was followed up with several meetings with individual farmers which led to five farmers in the area volunteering to be part of this initiative. All the farmers are from Kurabalakota Mandal of Chittoor District in Andhra Pradesh. One of the farmers started practicing organic farming about two years ago but resorted to using chemical pesticides once in November 2008 when his tomato crop had been attacked by pests close to the harvest period. Following discussions with us he has decided to replace the chemical pesticide by using natural formulations.

A second farmer has been practicing organic farming in a quarter acre of his land for one year and is committed to converting the remaining land to organic farming. While the remaining three have committed to setting aside quarter to half acre areas of their land to begin organic farming by April 2009. Discussions are ongoing with the farmers to provide support in the form of advice on crop planning, use of manure and bio-fertilisers, and natural pesticidal formulations as well as provide a market for their produce. The school has an active vermicomposting unit which could serve as a source of compost for these farmers in the initial stages.

To support this initiative and the farmers in the process of converting to organic farming, RVS is creating an organic resource centre on the school premises. This centre will first set up demonstration units for composting as well as bio-pesticide preparation and facilitate education and training to all farmers in the area on sustainable farming practices.

The farmers are also being requested to maintain information on inputs into their farms (both for organic and chemical farming). This information will then be used in community meetings to provide confidence to other farmers to wean them away from chemical based farming to organic farming.

The next step is the establishment of a seed bank at the school to propagate, store and maintain native seeds for the vegetables and crops grown in the school. This seed bank will also serve as a resource for the surrounding community and help in the setting up of a community seed bank.

Several other activities in the areas of natural re-vegetation, livestock management, empowerment of women, health and nutrition and education are proposed under the RVSDA. An integrated action plan that recognises and takes into consideration the interdependencies of the stakeholders and the resources is currently under preparation.

(Source: Radha Gopalan and Santosh Kumar in communication with OIP)

GOWDACHERVU VENKATAREDDY

s/o Fakirreddy, At post Muthyala cheruvu, Mandal Kadiri, District Kadiri, Andhra Pradesh.

G Venkatareddy, son of Fakir reddy has experience of 25 years in farming. He has 4 acres 30 cents of dry land and 2.25 acres of wet land. He farms on both.

In his dry land he grows: Ground nut – TMV2, JL24 and a spreading variety which was grown about 20 years back; tur – Nalla kandi (black tur), Tella kandi (white tur), Nati Kandi (a local red variety); horse gram, cow pea, jowar, bajra and Saama – Pedda Saama.

In wet land he grows: Ragi, Paddy, Sunflower and Groundnut.

He has been preserving traditional variety of Paddy – Delhi Bhoghalu which was a well known fine paddy variety about 25 years back. He has kept this variety alive and has distributed the same to others. Alongside which he is also maintaining 4 more local varieties – Karthika Pisanalu, Chaowti pisanalu, Pedda kesari vadlu, Jake vadlu.

He has good knowledge of the traditional farming systems and follows crop rotation and also uses the manure from his livestock. He is cultivating the paddy thorough SRI method. He controls pests through the use of biopesticides that he prepares by himself.

He is involved in training of farmers about biopesticide preparation and usage.

(Source: Dinesh Kumar)

B.K. SUBRAMANYAM

Margadarsi, 19-29 J P Road,
Newpet Kuppam - 517 425, Andhra Pradesh.
(Source: ARISE)

K. RAMANA KUMAR

Care for Nature's Creatures, 10-3-142 Panja Street, Bapatla - 522 101, Guntur, Andhra Pradesh.
(Source: Communication with OIP)

P. VISWANATH (VISWAN)

Vikasa Cooperative Colony, Chodavaran - 531 036, Visaka District, Andhra Pradesh. Email: vikasa@rediffmail.com
(Source: K. Ramana Kumar)

K. SURESH

Sir Albert Howard Memorial Trust, State Seed Farm, Ghantasala, Krishna District - 521 133, Andhra Pradesh.

(Source: ARISE)

ORGANIC CERTIFICATION IN AP FOLLOWING THE PARTICIPATORY GUARANTEE SYSTEM (PGS)

Andhra Pradesh has 634 organic farmers registered through 58 farmers' local groups. Timbaktu Collective and DDS are the PGS Organic Facilitation Councils with 17 and 41 grassroots level local groups respectively.

Details of these local groups and their organic produce is posted at the www.pgsorganic.in

Punukula: Cutting Dependencies on Pesticides

This is the story of how a village in Kamman district of Andhra Pradesh made efforts over a five-year period (1999 to 2003) to rid themselves successfully of toxic, chemical pesticides.

Punukula is a small village consisting of 189 households, with a population of around 860 persons. There are 128 cultivators and 51 agricultural wage labourer households in the village. Agriculture is the mainstay of this village, like thousands of villages in India.

Punukula was not a cotton growing village traditionally. About 15 years earlier, the villagers grew pigeonpea, jowar, greengram, etc. Then a few farmers decided to imitate the Guntur farmers and went in for cotton cultivation. Realising the market potential, the pesticide industry began its marketing efforts here. The farmers who were mostly illiterate relied on the pesticide dealers to suggest to them which pesticides were to be used, when and in what quantities. Very soon, they were trying several pesticides on their cotton crop. Some of the farmers lost count of the number of times they were spraying, or what they were spraying. However, the pest menace did not diminish.

The villagers of Punukula soon began using large quantities of pesticides on other crops too, including pigeonpea and on paddy. Pesticide use on chilies meant discoloration of the produce, and this brought down prices by nearly half.

There were many acute poisoning cases in the village and some people even died due to pesticide exposure.

The economics of farming went out of control. The returns all seemed to have gone straight into the all-in-one dealer's hands. The dealer would be the one who would sell them seeds, fertilizers and pesticides – on credit, but at high interest rates of 3-5% per month. Since the farmers were in no position to repay these loans, the agreement would be that they sell their produce to this all-in-one dealer. The dealer would inevitably fix the price at rates lower than the market value. The farmers had no choice but to accept the rate, in the hope that next year's investments would once again be supported by the dealer. The cycle became extremely vicious with no way out. The farmers were now truly on the pesticides yreadmill.

For many, suicide seemed the only escape from this trap. However, the farmers were not ready to give up cotton cultivation. Even if it meant several problems, the farmers saw the crop as a good source of income in years that it yielded well.

In 1999, an NGO named SECURE decided to start Non-Pesticidal Management (NPM) approach in cotton in Punukula village, with the technical and financial support of the Hyderabad-based Centre for Sustainable Agriculture. After a great deal of persuasion from SECURE, 20 farmers agreed to be part of the programme.

At the end of the first year, the positive results were already apparent. In 2001-02, NPM was taken up on 6.4 hectares. The approach now was to completely eliminate the use of chemical pesticides in cultivation. On the non-NPM plots, farmers experienced a negative income while on the NPM plots the yield of seed cotton ranged between 10 quintals/ha to 18.75 quintals/ha. The average plant protection cost incurred by NPM farmers was Rs 4301 per hectare, and the average net income was Rs. 3420 per hectare.

By 2002-03, the NPM concept in Punukula was tried out with a much larger number of farmers, in crops like paddy, redgram, cotton and chili. The number of participating farmers went up to 59, with 58 hectares under NPM.

In 2003-04, the acreage under NPM cotton went up to 1200 acres in Punukula and Pullaigudem villages, covering all the cotton area in Punukula. The average yield per acre was 12 quintals, with the cost of cultivation hovering around Rs 8563/acre. The net income per acre touched Rs. 16,637 per acre. In the 10 acres chili cultivated under NPM that year, the average net income was Rs. 23,410 per acre. This was unheard of by the villagers in recent times. The discontinuation of pesticides also meant a great improvement in the quality of chili and therefore, the produce fetched higher prices in the market.

Enabhavi: An entire Andhra village converts to organic farming

Enabavi, a small village in Lingalaganapur Mandal of Warangal District infamous for its Chemical farming and farmer suicides showed the resolve of a strong community which decided to take control of its agriculture into its own hands under the leadership of Ponnam Mallaiah with the support of Jangaon based local NGO, Centre for Rural Operations Programmes Society -CROPS (www.crops.co.in).

With just 52 households in the village belonging mostly to the backward castes, the village started shifting to non-chemical farming about five years ago. Then in 2005–2006, the entire land of 113 ha was converted to organic farming. The village formed a Farmers Cooperative and today they market their produce directly to consumers in the near by town of 'Janagaon' where it runs a shop and in Hyderabad under the name 'Sahaja Aharam'. Though formal participatory guarantee systems established in the village in this alternative model of organic farming, there is strong social regulation within the community to ensure that there are no 'erring farmers.' The elders in the village take the youth along with them. They also have started investing in teaching their school-going children the knowledge and skills of non-chemical farming.

Ponnam Mallaiah was recently honoured with the Krishi Gaurav Award for 2007-08 by the Patanjali Trust of Hardwar.

(Source: CSA)

South India

Karnataka

Interview with D.D. Bharamagoudra

D.D. Bharamagoudra is President of the Organic Farming Association of India (OFAI) since its inception. He recently underwent open heart surgery and is now recuperating. He can be contacted at:

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P. Babu: DD, twelve years have passed since your last recorded discussions with Claude and the first edition of the Organic Farming Source Book. How do you see the progress of organic agriculture since? Then, you were a young organic farmer, now you are not only experienced, but are the recipient of many awards, a highly respected name in the movement and also one of the authentic voices for rain fed agriculture and the President of Organic Farming Association of India.

D D Bharamagoudra: The organic movement has definitely grown. The Government too is extending some help to organic farming. Many states have accepted organic policies. Very many meetings and workshops on organic farming are held regularly. In Karnataka, if you visit any village today, you will meet at least one good organic farmer. Subhash Palekar's meetings have also encouraged many chemical farmers to go for natural farming, realising it is so simple. Some are continuing with natural/organic. Any way, since they have started, they now do not want to give up midway.

P. B: We are also seeing much business interest, practice of minimum organic agriculture for markets and certification, there are also many departments and missions promoting organic farming. Should not organic farming be booming?.

DDB: Yes. Booming, in one way. But many are coming to organic agriculture for markets and higher prices, more so with commercial crops. On the other hand organic farming only for markets is not real organic farming as it is still dependant on external inputs. The interest and focus is very different.

P. B: In Karnataka suicides of farmers is very common. Recently there was police firing on farmers protesting against the short supply of fertiliser. How do you as an organic farmer respond to these unpleasant developments?

DDB: These suicides are not only in Karnataka but in other states too. The suicides are more among farmers who are into commercial crops. In cotton and pigeon pea. Too much dependence on mono cropping brings very high risk, especially in the absence of any other crops. 'Mixed crops' is the insurance for farmers, not, 'crop insurance'. Where the crop diversity is high, suicides are not taking place. Being an organic farmer, I have no use for chemical fertilisers. The failure is only in commercial chemical agriculture.

D.D. Bharamagoudra

P. B: Tell us something about the progress of the organic movement, which areas or category of farmers are responding to organic agriculture?

DDB: The progress is more in horticultural crops, in fruit crops and not in vegetables. Small farmers are also into organic farming. In Malanad, spices are cultivated organically in a big way, but not paddy. Sericulture and fruit trees are cultivated organically where there is some irrigation. Rain fed organic farmers naturally go for food crops, oil seeds, pulses and cereals. In irrigated conditions, not many go for food crops, except for paddy in canal irrigation.

This is because, tree crops are mostly adaptable and management friendly. Farmers have some facilities for green manure, cattle and also have better exposure to latest trends. In rainfed areas, small agriculture family and family labour is the reason for better adoption of organic practices and they are successful too.

P.B: Previously, you mentioned that you are able to get a comparable yield but not really break the record or reach the chemical input yield levels that you were getting, how is the situation now?

DDB: In chemical agriculture sometimes you get good yield sometimes not so good. For us organic farmers on an average every year the yield is good. The situation is more or less the same. The yield is comparable and sometimes we do get record yields. And we get more yields when the rainfall is less as compared to chemical farmers whose farms suffer during poor monsoon.

P. B: The cropping pattern and crop mix you follow is very interesting. Could you tell us something more about it? For example; is the system evolved, and how do the farmers decide that one system is better than the other?

DDB: The cropping pattern is not my own. It is very traditional, comes from our fore fathers and mothers. Many farmers have discontinued the practice, but we continue with it and are trying to adopt it to the present situation. As soil and moisture conditions differ, different crop mixes are chosen. Just to give an example, if the rains are early, farmers will not go for groundnut and cotton. But if the rains are not in time they will go for this combination. Another example is, if the rains are late farmers will go for erect ground nut and if in between they receive some rains, they will go for rabi jowar, cotton with bengal gram in between rows; to utilise the moisture.

And in karif, spreading groundnut, niger, cow pea and green gram are mixed, not in rows but scattered: the main crop groundnut will be in rows, pigeon pea will also be mixed if the family require it. From earlier experience we know what crop mixes suit a given climate and time of year.

Crops are mixed in such a way that one crop matures earlier and the second one later. One crop helps the other crop in growing and controlling the pest and disease. Some of the crops are horizontal and some are vertical, using moisture and nutrient differently, like shallow roots and deep roots. Example: khariff jowar +cowpea+ pigeon pea+ horsegram or khariff onion+chilly +cotton + vegetables or rabi jowar +bengal gram +wheat +safflower +mustard. In some places farmers mix erect groundnut with cotton.

I am not mentioning the border crops which are many and useful for domestic consumption.

Crop rotation is another important practice. Simply put, if we grow pulses and oil seeds on a particular land, the next year, we will go for cereals on that land. If we put FYM on one part of the land, we will grow spreading variety on that land. This will help hold moisture. After groundnut crop, in the next year, we will go for khariff jowar +pulses +cereals +coriander on the same plot. If we grow chilly +cotton+ onion on the land, we will manure that plot by sheep and goat in the next year. This is followed by green manuring in kharif and then we go for cereals.

P. B: What are your specific innovations in developing a cropping pattern?

I now sow less density of seeds. Hardening of chili seedlings is one of my innovations. It took me five years of experiment to standardise the method of hardening the chili seedling. The usual method of transplanting the seedling is to pour water for every seedling and plant it even if the weather is cloudy or rainy. But in our method no pouring of water is done even if there are no rains. The chili plants are able to withstand the moisture stress. Similarly I am successful in hardening jowar seeds.

For most of our crops, I am able to reduce the seed rate to 50%.This is very important in rain fed conditions .Similarly I experimented with spacing between row to row and plant to plant. I increased the distance between the rows.

These small innovations are very important in reducing the expenditure, cultivation cost and also ensure best /good yields, in rain fed farming. The general practice is to have closer rows and more seed rate .But if the rains are not there, we will not get good yield.

P. B: Could you tell about the major changes in cropping pattern, crop rotation, if any, in the recent past in your region?

DDB: Wherever irrigation is available, farmers have given up old practices of crop rotation. Earlier farmers used to grow safflower 6 rows to one row of short safflower full of thorns. But most of the farmers left safflower because it is very difficult to harvest. For a smooth harvest, it should be harvested when the western wind is blowing. If the eastern wind is blowing, it is very hard and quite difficult to harvest. The harvesting is usually in the night. Many farmers have left it even though it is a very good crop and economically fetches decent returns.

Earlier during rabi, we used to grow local variety bengal gram mixed with local variety jowar, swon twenty inches apart. This is no more practiced. Now ‘improved’ variety bengal gram is grown and both jowar and gram are grown as monocrops leading to use of pesticides.

P. B: What is the technical progress in organic nutrient, pest and disease management in the recent times?

DDB: We cannot replicate the natural chemical composition of soil and it is also not necessary.Organic residues are composted and used for improving micro nutrients and soil fertility. Application of different types of fermented liquid manures with cow dung and cow urine as base is the single most advancement in organic farming in the recent times. We need much more experimentation and trials to work out various combinations of liquid manure and time of application etc. for getting best results both in yield and pest and disease control.

The point is, if soil is alive and we follow crop rotation and mixed cropping and the seed is of good quality then we need not worry too much about other problems. If stray problems of pest do occur, one can use plant extracts to manage it.

P. B: Somewhere you have said, your village is seed self sufficient. How is the situation now?

DDB: Now too, rain fed farmers largely keep their own seeds for many of the crops. But in some crops like chickpea and erect variety of groundnut farmers are depending either on the market or Agricultural Department. This is partly because many of us do not have enough space for drying the groundnut. In many areas, local sunflower has disappeared and hybrid has come .The situation in irrigated areas is exactly the opposite.

P. B: What about Bt cotton and GM seeds?

DDB: We, organic farmers all along, have been fighting against Bt cotton and genetically engineered seeds. There are certain technical issues with Bt/GE which I leave to genuine scientists to comment upon. Now we know very well that some of these corporate or Indian company interests are definitely not for or with the farmers' .Coming to the issue of BT cotton, wherever irrigation is there in the first two or three years many places have got fairly decent harvest. But soon it goes down .In our area, last year farmers got decent yield, and seeing this there was big rush for BT cotton this year. However, already many farmers have sprayed twice.

I want to emphasise that where ever monocropping is followed and crop rotation and mixed cropping is not there, the agriculture and farmers are going to have severe problems. In kharif you have a single crop and if it fails, farmers lose everything. As mentioned already, spraying has started in BT cotton and other pests have started appearing. Do you remember Rannebennur and Haveri-earlier farmers have harvested 10 to 12 quintals of hybrid cotton under irrigation and 5 to 7 quintals in rainfed condition. Now the situation has changed and the yield has gone down to 2 to 3 quintals. The farmers have already shifted to maize and nobody knows for how long.

P. B: There is an alarming decline in farmers using their own seeds in many crops and the increasing presence of MNCs. What is the response of farmers, especially organic farmers?

DBB: MNCs have a marked presence in irrigated areas. Generally, organic farmers keep their own seeds and now with the indigenous seed campaigns and increased awareness to protect and produce organic seeds the scene is quite encouraging. I believe producing large scale organic seeds and distributing it is no good. Farmers should use their own seeds, produced locally.

P. B: What about the preference even among organic farmers for growing non food?

DBB: In rainfed organic agriculture the emphasis is still on food crops. But in irrigated organic, the emphasis is on non food crops. It is important that there be certain incentives and other support systems for food produce and for farms where bio-diversity is consciously maintained and conservation practiced. Karnataka, has incredible diversity – rain fed organic, irrigated organic, organic horticulture, organic plantations etc. etc. There is also good progress in organic management in most crops.

P. B: Could you share with us the best and the worst of organic practices that you have come across?

DDB: There are some outstanding organic farmers spread across Karnataka. Even so, I would l like to say that Subhas Sharma from Yavatmahal and Dhirendra Soneji from Gujarat are two outstanding organic- natural farmers in India, who in different ways have shown what can be achieved in this system of agriculture.

P. B: Culture of food and agriculture is very much related. To what extent is the trend of processed, packed, fast food etc., affecting the way we farm and eat?

DDB: Changes are obvious, consumption of wheat has shot up in rural Karnataka and so has the demand for processed food.

When we were young, rice was cooked once a month and now it is almost every day. Making traditional sweets and snacks, which was almost a routine, is now restricted to festivals and occasions. Readymade idli and Jamun mix is available off the shelf. Thankfully, we still have our various chutney powders and preparations made out of pulses, so everything is not totally gone.

When I was young, my food was jowar roti, jowar rice, milk curd, butter, ghee, etc. Now it is wheat and rice and very little curd and no milk at all. The change in vegetable consumption is stark, potato, cabbage, cauliflower tomatoes are replacing our traditional soppu (leafy greens).

P. B: Coming back to organic practices, to what extent are organic farms able to manage the climatic variations? Is it too early to make a statement?

DDB: Organic farming might help manage climate change. With my experience as an organic farmer, I believe, to some extent organic farming could manage climate changes. Drought, moisture stress, heavy rains, cloudy weather all affect crops and the impact is less if you are practicing organic farming.

P. B: Universities are conducting some research on organic agriculture. To what extent it is useful?

DDB: I am not really convinced about university's interest in organic farming and their research.

P. B: Your comments and observations on zero agriculture, natural farming, organic agriculture, etc.

DDB: No agriculture is zero agriculture. Other than Fukuoka, there is no natural farmer. Natural farming in rain fed and that too for food crops is not yet possible and I have yet to come across anybody practicing rain fed natural farming and producing food. Yes, dryland horticulture is possible and many are doing it.

I am not against any method. I believe in, 'no synthetic chemical inputs'. My focus is, feed the soil, diversity based organic farming, food production and work for sustainability.

P. B: There is declining interest amongst the younger generation towards farming. Why and what could be done?

DDB: Cities attract the young. Continuous drought, price problems, lack of support from Government and public trend of looking down upon agriculture as fit for useless people, non- availability of liquid cash…considering these realities, farming families themselves discourage children from taking it up.

P. B: Any regrets and any ambitions?

DDB: Practising organic farming has brought with it much satisfaction and achievement. After a time, I could not concentrate on agriculture because of my social involvements. On the farm a routine has set in for the past many years now. I would really like to leave all social activities and work towards good rain fed, tree based farming and diversify into fruit crops. This will be successful only with community involvement, for which I have to be totally based in my village.

Organic Farms

NARAYAN REDDY

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Narayan Reddy stumbled upon organic farming while he was seriously considering selling his farm in 1978 and investing in a business. He happened to voice his concerns to Allwyn Dekker, a Californian organic farmer who was growing organic vegetables for 200 inmates at a Natural Therapy Centre. Allwyn suggested Narayan try organic methods. The rest is history!

Today Reddy is one of the most influential and well-known practising organic farmers in the country. Despite being extremely non-assuming and gentle, he has inspired many other farmers to change over to sensible organic farming methods. Today he remains one of the wise old men of the country's organic farming movement. He speaks with calm authority. People listen. They also find him very practical.

The farming system of the Reddys is based on a theoretical framework which is also grounded in economics and philosophy. When the Reddys are experimenting with methods, looking for ways to improve yields and so forth, they do so within the bounds of how they believe the ecosystem of their farm works. Narayan, for instance, would not try using even a small quantity of inorganic fertilizer to see if he could get an increase in yields that would be high enough to give a net increase in profit because he believes that inorganic fertilizers are not good for the total nutrition of the soil and plant.

According to him, total nutrition is most important for a plant. There is a gloss to the leaves that only truly healthy plants possess. Plants fed with inorganic fertilizers can be dark green and otherwise appear healthy, but they will not have this gloss of health. Adding inorganic fertilizers would cause imbalances which might temporarily improve yields, but would decrease populations of beneficial bacteria and earthworms and make the plant more susceptible to pest and disease attack. Reddy is against spraying micronutrients on foliage or 'foliar feeding', for the same reasons. He feels it is likely to create imbalances within the plant because the leaves will absorb everything indiscriminately, whereas the plant is able to selectively absorb nutrients through the root hairs.

AL WORKSHOP ON PANCHAGAVYA
20.04.2008
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Veteran organic farmer and popular speaker Narayan Reddy addresses a panchagavya workshop with Dr G Nammalwar

The Reddys' commitment to their style of farming is integrated with their philosophical beliefs as well. Reddy believes that for a farm the soil, plants, animals, and humans are like four legs of a table. All are intrinsically important. He feels that when the farmer uses agrochemicals, there is less of a connection between the farmer and the soil – the farmer is always aggressive, like an enemy to the land. The common practice of breaking clumps of soil to make the soil soft and ready to plant is another example of this. Reddy objects to the breaking of clumps not just because it is unnecessary work, but also because he does not like the relationship he sees is intrinsic to it. He prefers to maintain his soil such that it is soft and does not require this harsh treatment.

Reddy says that organic farming takes him closer to religion, that it makes him feel less selfish because he is always looking at the interdependence of things. These considerations go beyond the economics and provide a strong motivation for the Reddys to continue farming in the same manner in the future.

Farming practices: The Reddy farm is comprised of four acres of coconut trees, 200 fruit yielding and 100 non-yielding (five years old). On these 4 acres there is intercropping as follows: on two acres, coffee and curry leaves; on one acre fodder, one acre floriculture.

On another two acres they have 30 chickoo trees with 15 coconut trees on the borders and intercropping of beans and grains. There are two acres of guava and mango trees, two acres of teak (600 trees, 18 months old, intercropped with banana and mulberry), one acre of paddy and one acre of ragi and 52 young coconut trees.

The Reddys have also obtained three acres of land on lease of which two acres (teak and banana) are irrigated and one acre is dry where ragi and beans are grown.

They have more than a dozen varieties of trees including 80 mango trees. They are against eucalyptus as, according to them, it affects natural pollination as experienced by them with regard to coconut and betelnut trees.

They have two gobar gas plants of four cubic feet each and several animals. They have no oxen. All the animal food is obtained from the farm itself. They do not plough the land except for paddy. Annually they make 50 tonnes of compost from 10 tonnes of dung and 40 tonnes of bio-mass. They do not do any vermiculture as Reddy believes that organic farming produces conditions suitable for natural growth of earthworms and there is no need to introduce exotic strains.

For pest control, the Reddys use a mixture of one kilo neem and one kilo round mogra flowers (chandu mallige in Kannada) with one litre cow's urine and 10 litres of water to spray on one acre of land.

For small areas, in order to keep mealy bugs, aphids and scales in check, they dust wood ash on the plant's foliage at a rate of about 100 grams per cubic meter of leaf area. Sometimes they mix about 10 millilitres of kerosene with the wood ash to make it more effective. They find that dusting in the early morning is most effective because the ash clings to the dew on the leaves.

Weeding is done by hand with a tool called a dokari. This tool makes it possible to sever the plant's root below the surface of the soil. Each person cutting then separates out the grasses and other plants that are good for cattle fodder. These are carried to the cattle and the rest is composted. When weeding around small trees or banana plants, the weeds are used as mulch at the base of the plant. When weeding is not necessary, but the competition of weeds with a crop needs to be reduced, the Reddys cut the weeds at their stems and either leave them as mulch in the field or carry them to the cows. The whole 12 acre farm is irrigated with the drip system.

Obstacles to alternative agriculture: It was easy for Reddy to identify many of the obstacles he faced during his transition to alternative agriculture and to identify the obstacles he is currently facing by staying with it. He also has some idea of what obstacles other farmers are facing in and around Sorahunase village.

First on Reddy's list was the propaganda from the media, government extension workers, and politicians pushing chemical inputs. At least three times a day, Reddy says the radio airs advertisements for pesticides and fertilizers disguised with popular music. In the nearby village of Varthur there are numerous bill-boards and entire sides of building painted with images of prosperous farmers holding bags of chemical fertilizer.

Reddy estimates that, because of previous soil depletion, yields on a farm will go down for at least two years during the transition from chemical to organic. Farmers may need to purchase organic fertilizer. Without subsidies or loans, it is impossible for many farmers to even consider organic farming.

Reddy cannot discuss obstacles without discussing possible ways to alleviate them. Foremost, he felt that more research and documentation of organic farming methods would be of great assistance both to farmers and policy makers alike. He stressed that these studies should be widely published and distributed through the media in the most accessible way possible. Since the national government is responsible for protecting people's health and safety, Reddy feels that they should use the media to educate the public on the dangers associated with using pesticides.

Reddy also suggested subsidizing the cost of toilet construction which would enable the collection of human feces, the purchasing of biological pest control kits, the planting of certain herbs and trees for use as anti-feedants, and the purchasing and feeding of livestock whose manure could be used as fertilizer.

Promoting SRI paddy cultivation

Reddy has the qualities of a keen experimenter and the self assurance of an adventurer. When he heard of SRI, he took to it like a fish to water. He has taken SRI practice to unprecedented heights and been partly responsible for its spread across the country and to neighbouring nations. He believes SRI to be the greatest invention he has witnessed during his life time.

It was a coincidence of sorts that lead him to SRI. He happened to read an article on SRI by CIIFAD in a magazine at a conference in France that captured his imagination. While replicating on his own farm, his wife suggested direct seeding instead of troublesome transplanting. This led to the invention of the direct planting technique. Annapoorna farm continues systematic experimenting.

He was excited by the results and enthused fellow farmers and NGOs in his extensive, informal network of the organic farming community to explore this new technique. In a way, this was launched while sharing his experience at a function at Timbaktu Collective, who followed it up by organising a visit of farmers including women involved in transplanting to Narayan Reddy's farm, thus providing instant impetus to the spreading of SRI technique.

Instead of planting a single seed, two were planted together and if one did not germinate, a fresh seed took its place. Also the distance was maintained at 12"x12". The direct benefit in this case was that seed requirement dropped to 1/15 and water requirement to one-third. Production doubled and percentage of unfilled grain was negligible. The rat menace came to a virtual halt because of spacing. There were also instances when rice was grown with sprinkler irrigation. Many of his farmer friends reported yields over two and half times what they got through conventional methods. He reported 94 tillers per plant while a friend recorded 135, and grains in a panicle counted 200 to 312.

What is surprising to him however is that, though SRI came to Cambodia, Sri Lanka, Thailand, Pakistan in the early 1990s, India did not explore its potential till 2001.

On organic farming, his view is that, given the reality of the small and marginal farmers of India, it may be practical to switch to organic in a phased manner over a period of 5 to 6 years, without the assistance of any subsidies or incentives. This he feels is important, as one must move away from the subsidy syndrome. The indicator of a good farm is its soil, a farm should he recommends, have 5% humus and 35% stone/pebble content to be healthy and have good water retention capacity. He recommends keeping farm animals and the cultivation of azolla as good practices for organic farming and says, 'Agriculture is not an uneconomic profession but the only thing is we have to work sincerely for at least 4 hours a day and five days a week. Then we can lead a happy life – I don't say a luxurious life like any trader, or a businessmen or a bureaucrat – but a happy and honourable life.'

(Source: Dileep Kamat/update by Claude Alvares)

VATSALYADHAM ASHRAM

Mudhol - 587 313, Bagalkot District, Karnataka.

Vatsalyadham means the Abode (Dham) of Parental Love (Vatsalya). Ashram means a place where pure and ennobling happiness (Anand) is achieved through work (shram). Vatsalyadham Ashram was started on 16th March 1983 in an open, partly barren, partially cultivated, piece of land of over two acres. The general guiding principle of the residents of the ashram is to grow all that the ashramites wish to eat and to eat what is produced in the ashram. The ashram was founded by Swami Sevanandaji, now 92, to experience God in all things, in everybody at all times. There are presently thirteen residents at the ashram, including six people, four cows, two dogs and a cat.

The ashram has two acres and nineteen gunthas of land. Since 1991 no chemical fertilizers have been used. Wheat, maize, paddy, soya-beans, jowari, ragi and groundnut are the main crops grown, supplemented by pulses, green gram, black gram, cowpea and beans. Vegetables such as brinjal, lady-finger, radish, knol-khol, etc. are grown. Besides these, mustard, turmeric, onion, garlic and fenugreek are also cultivated. Fruits such as mango, papaya, guava, pomegranate, fig, jambul, ramphal, sitaphal, gooseberry and banana are also grown.

Glyricidia trees grown on the boundaries serve as a natural interwoven fence for the farm. The leaves from the regular cropping of these trees also provide green fodder and manure for the farm. Besides this, vermi-manure and compost and slurry from a gobar gas plant make the farm self sufficient in agricultural nutrient requirements.

Ramesh, one of the housemates of the ashram, states that maize requires plenty of fertiliser replenishment as it is a plant that draws huge resources from the soil. So when the ashram decided to go organic in 1991 they began to use a combination of cow and chicken manure and neem cakes as fertilizers besides the glyricidia. After sometime, in 1995, chicken manure was done away with and vermi-compost was purchased and introduced during an intermediate period before the farm became self sufficient.

More than a decade ago, chemical pesticides such as Malathion, BHC, Endosulphan and Sulphur had been used on the farm. For over 10 years now, the ashram has used natural pesticides to handle all pest problems. Juices from neem, dhattuvi, kanagal and jandu leaves and garlic are mixed with cow's urine and the derived dilutions from these are sprayed, to protect plants from various pests.

The ashram remains true to its original intent which is to live a self sustained life, in tune with nature and the Creator, rather than for any commercial motive.

(Source: Communication with OIP)

BASAVRAJ SIDDAPPA KAPSI

(Secretary, Organic Food Club), Post Yamakanmardi, Taluka Hukkeri, District Belgaum-591245, Karnataka. Cell: 09449734320

Kapsi, 60, is an agricultural graduate. Since his childhood he was interested in botany and allied subjects. When his father passed away he started managing the family farm (1980 onwards). He put in 22 years of government service before taking voluntary retirement in 1994, while occupying the post of assistant agricultural officer.

Kapsi owns 23 acres of land in all, of which 11acres are dry land and 12 acres irrigable land. His farm is located on the Poona-Bangalore highway, six kilometers away from his village, Yamakanmardi.

After years of using chemicals in farming, he began organic farming from 1992. Starting with only 2.5 acres initially, the entire 12 acres has now been brought under organic farming.

He maintains four animals which provide sufficient dung for compost making. Kapsi owns a mini power tiller. He finds weeds to be a serious problem on the farm but has over time used them to his advantage as mulch. Mulching has helped combat weeds, maintain soil moisture and increased the population of earthworms and other microorganisms vital for maintaining soil fertility.

Kapsi in his organic sugar cane field

Presently Kapsi's farming pattern on the 12 acres of irrigated land is as follows: sugarcane - 2.5 acres, banana -1.5 acres, figs - 1.1 acres, rose - 1 acre, mixed plantation of mango and drumstick - 1 acre, paddy (local aromatic basmathi variety)- 1 acre and the remaining is devoted to an assortment of seasonal vegetables. Three acres of land at a time are always left fallow for change over of crops. Drip irrigation and micro sprinklers meet the water needs on his farm.

Compost and vermi-compost are produced on the farm itself. Cow dung and cow urine slurries have helped in boosting the production of vegetables. The plants have over the years developed resistance to pests, and natural predators take care of the odd attack. He believes that consistent organic farming methods have brought in a natural farming element into his land, the land now takes care of itself with hardly any external inputs. He has developed various combinations of plant extracts that are used at different times, keeping seasonal conditions in mind.

He has no dearth of customers for his produce: flowers and fruits are supplied to the local market in Belgaum, the surplus marketed through Javik Krishi Society, Bangalore. And, sugarcane products find a ready export market.

Since November 2002, he has, along with his like minded organic farming colleagues, been running an 'Organic Food Club' which initially began by supplying farm-fresh poison free vegetable hampers to about 560 families in near by Belgaum city. However, since 2006 the club has moved to selling the produce at definite locations through a mobile store.

(Source: Communication and Tele-interview with OIP)

ASHOK K. PAVASHE

Tanaji Galli, Post Benkanhalli, Taluka and District Belgaum – 591 108, Karnataka. Ph: 0831-2447662 Cell: 09880494770

Pavashe has been practising organic farming since 1992. Now around 60 years, Pavashe was once an advocate. In 1984, he gave up his legal practice because of the unethical methods employed in the profession. Keenly interested in farming

Ashok Pavashe in his organic chikoo orchard. The chikoos from his farm have won awards for the third year running.

right from childhood he began to farm on 11 acres of land he had inherited from his father.

Despite the digging of three wells and installation of pumpsets the soil remained poor and water was scarce. So he decided to go in for horticulture. He planted 500 chikoo trees, 325 desi varieties of cashew plants and 425 improved variety – Vengurla No.2 and No.4 in 1991. In between, he planted 340 coconut trees – one coconut tree inbetween four chikoo trees.

On his own, Pavashe grafted 300 chikoo plants to old mother plants and then transplanted them in 1996. He also planted 8000 mulberry plants and started sericulture in a newly constructed rearing house in 2003.

All this changed with fall in cashew and coconut yield essentially due to root competition for space and nutrients. Taking a practical approach, he removed all the cocoonut and cashew trees and most of the mango and planted in their place self grafted chickoo. Presently his farm can be described as a chickoo orchard interspersed with ginger .

With increase in sericulture in Andra Pradesh, and fall in rates back home, he is shifting from sericulture to cultivation of oyster mushrooms in the sericulture sheds.

Though he had used NPK chemical mixtures sparingly for several years he had also relied on dung manure, fish meal, bone meal and sterra meal. In 1992, however, he introduced drip irrigation and stopped chemicals completely.

Experimentation is on in a big way with nutrient value testing of vermicompost . Pavashe is able to obtain about 4,500 kg of vermicompost for every two month batch from a 1000 sq ft. composting area. The results he feels are very satisfactory, and is encouraged to take his composting towards greater productivity aiming at 5-6 batches of compost per year.

Why did Pavashe switch over to organic farming? As an interested and voracious reader of books and magazines on agriculture he came across plenty of material which convinced him that chemical agriculture is not sustainable. The high costs of chemical fertilizers and pesticides and the need to constantly increase their dosage also made him decide to abandon chemical farming. Organic methods he realized would restore soil fertility, maintain its health and result in healthy plant growth.

Within just three years of changing to organic, Pavashe saw three remarkable changes on his farm:

1. The number of earthworms increased steadily in the soil, a clear indication that soil fertility was improving.

2. Expenses were much less than when he was farming with chemical fertilizers and pesticides.

3. The taste of the chikoos improved considerably. People kept telling him that they hadn't eaten such tasty fruit before!

Pavashe's farm has eight cows, two female buffaloes and about 30 odd poultry. He has a gobar gas plant (Deenbandhu variety), the slurry of which he mixes with green leaves for his vermiculture. He has not mechanized his farm at all but has acquired one power tiller for superficial tilling and mulching. His net income ranges from Rs.1, 75,000 to Rs.2, 00,000 each year. He sells the entire orchard to local wholesalers; however with the present awareness and demand for organic products, negotiations are on to supply directly to organic outlets in Pune and other big towns.

Says Pavashe, 'For the past three years the chickoos from my farm are winning the first prize at the district level exhibition organised by the Horticulture Department of Belgaum. The taste and size of the agriculture produce is the best only because of organic farming.' (Source: Telecommunication with OIP)

PURUSHOTHAMA RAO KRISHI SAMSHODHANA PRATHISTANA

Krishinivasa, Kuruvalli, Thirthahalli – 577 432, Shimoga District, Karnataka. Ph: 08181 228340

(Contact person: Smt. Shantha Purushothama Rao, President)

Sri Purushottam Rao passed away on September 18, 1998, age 65. He will be remembered as one of the pioneers of organic farming in the country. He dedicated his property to the Purushothama Rao Krishi Samshodhana Prathistana, a public trust whose main objective is to conduct research, education and extension in the field of Swadeshi Swavalambi Savayava Krishi (Indigenous, Self-Reliant Organic Agriculture).

Rao was the founder of the Krishi Prayog Parivar, Karnataka and member of the Krishi Koota and Bharatiya Kisan Sangha, India . He had 250 farmers as followers of the sustainable agricultural methods that he propagated. He was very popular in Tirthanahalli, Shringeri, Koppa and Sagar talukas for his sustainable farming innovations. Day by day, the number of followers grew. He was awarded the 'Krishi Rishi' title by a local people's organisation.

Purushottam Rao's farm is adjacent to Koppa Road and River Tunga. His house is surrounded by agricultural land. His family owned 10 acres on which he grew various crops with organic farming methods.

Why did Rao change over to sustainable agriculture?

He was one of the first farmers in the region to adopt sustainable agricultural methods. His reasons for going organic were: knowledge of hazards of chemical use and need for producing healthy food from the farm.

How did he change over?

According to his narration: 'We understood (my wife, Shylashree, and I) that we were using chemical fertilizers and chemical pesticides in low quantity, so that we were easily able to drop them within a short period.' Though, of course, for one year he faced the problem of low productivity, he used the method of 'reduce the negative, increase the positive' i.e., he went on reducing chemical fertilizer, chemical pesticides and went on increasing organic methods. He followed this method of operation from 1987 to 1989 and completely stopped chemical fertilizers in 1989.

Rao was a major innovator. A few of his very effective pesticide recipes are:

Preparation of pesticide from nettle: To produce nettle pesticide, fill up 10 litres of water in a barrel in which 32 locally available nettle plants are dipped. The barrel is closed and left for fermentation. To produce nettle pesticide compound, mix one litre decayed nettle water with 10 litres clean water. Now it is ready for use. This is good to control dryback and roof-root diseases, which attack coffee. This is applied once only.

Preparation of Survarnagodde leaf water: Take one kilo leaves, dip them in boiling water for about 24 hours, mix the boiled water with pure water in 1: 10 ratio. The pesticide is ready for use. It can be used for paddy, coffee and vanilla, to protect it from fungus. Rao used cow urine as pesticide for paddy, spraying it thrice in the life of a crop. Also, he used 'agnihotra'—a traditional method of pest control.

Rao did not use any special method to manage weeds and in fact used some of these as green fodder for his cattle. The rest was used as green manure for mulching to conserve soil moisture. In his paddy field he did not touch weeds before harvesting. They were mulched in the soil while ploughing. This practice not only reduced labour, but also protected the soil with moisture and fertility. He applies organic manure and other liquid manures which improve soil nutrition and result in the growth of earthworms and micro-organisms. One can see thousands of earthworms moving in the top soil in his field.

1. Cropping pattern

Area	Crops
0.75 Acres	Arecanut, cocoa, vanilla
2.5 Acres	Coconut, coffee, vanilla, banana
6.5 Acres	Vanilla (mulberry as shade/support plant)
5 acres	Paddy (2 crops)
1.25 acres	House, organic manure pits, cattle shed, farm yard manure heaps, etc.,

2. Farming practices

Krishinivasa production of compost: Compost heap of width 4 feet, height 4 feet and of convenient length is made. Crop residues, farm wastes, cow dung/gobar slurry, forest/top soil, poultry manure, press mud/sugar cane factory waste are used in different layers of thickness 1 inch to 3 inches. The heap is made under shade and kept for 3 months under suitable moisture and aeration. To this heap buttermilk/coconut water/ honey/ stinging nettle are added while applying to the field or during heap making to enhance microbial population.

Now the farm very rarely sprays any bio-pesticides. Only Bordeaux mixture is sprayed against Mahali of areca. However, in critical conditions bio-pesticides from local plants mainly stinging nettle, amarphophallus, bougainvillea, agape, neem, coriander, mukkadaka, etc., are prepared and sprayed. Amniotic fluid is also used in the farm either as a foliar spray or to energise soil.

The farm has been certified organic by SKAL, Netherlands. (Source: Arunakumara V. K., Trustee of the Prathistana)

K.T. NAGARAJ

Kullunde Village, Post Halaga, Taluka Thirthahalli, Shimoga District – 577 220, Karnataka. Ph: 08181-245533

K.T. Nagaraj's land is located at Kullunge village, close to the Mandagadde Bird Sanctuary. Together with three partners he holds 62 acres of land on which he grows various crops with organic farming methods. Land allocation for different crops is as follows:

On 12 acres: arecanut, banana (4 acres); pepper (4 acres); 8 acres are tank irrigated. On 10 acres: paddy (1 crop). On 25 acres: coffee and pepper. On 15 acres: multiple horticulture with coconut, cashew, mango, and teak; also used as grazing land.

He used chemical fertilizers for 10 to 15 years, using them in large quantities from 1982 to 1988. He started reducing the application in 1988 and completely stopped using them in 1992. He adopted the Kuruvalli Krishi Nivas production type 1 method (the model developed by Purushottam Rao, described earlier).

For pests, weeds and soil management he uses bio-control and organic methods which he learnt from Krishi Nivas Kuruvalli. For coffee, he uses Bordeaux. For weed management he removes weeds from the paddy field once a year.

A water tank has been constructed near his house which accumulates rain water and from this tank he provides water to the arecanut trees with a pump. For paddy, a natural water flow from the top of the hill channelled through the paddy field is used.

He has not adopted any high-tech machines. He uses a power tiller for ploughing and a pump for lifting water. He has two gobar gas plants which generate gas for cooking and other purposes. His house has electricity.

He has enough cattle (13) to feed his family with milk and allied products. They also meet his agricultural demands for cow dung and urine for manuring. The cattle shed is constructed in such a way that urine mixed with cow dung and water after cattle wash automatically get into the gobar gas plant and the gobar gas slurry is siphoned into the arecanut plot.

(Source: Communication with OIP)

DIWAKAR HARIDAS

Post Khadaklat, Taluka Chikodi, District Belgaum – 591 228, Karnataka.

(Contact:Narayan Haridas -08338-266518)

Diwakar at 84, is still an active organic farmer. The son of a freedom fighter, he too participated in the freedom struggle. When India attained independence, he completed his educa-

Diwarkar Haridas strolling in his organic betel leaf garden

tion (post graduation in education) and became a teacher. After working in a rural school for 15 years, he resigned from his job to join the Bhoodan (Land-gift) movement started by Vinoba Bhave. Not only did he donate five acres of land to Bhoodan, he also went on a six year padayatra for the movement under Vinoba's leadership.

As the movement lost its earlier vigour and momentum, he settled down in his native village of Khadaklat to practice agriculture and do grassroots level rural development work. During 1961-65, along with a few of his friends, he started a farmers' co-operative society. From 1966 onwards he has remained a practicing agriculturist. In the year 1984 he came across Fukuoka's book, One Straw Revolution, which inspired him to change over to organic farming.

Diwakar has a total of nine acres land, of which six acres are dry. He was able to irrigate three acres with an open well and a pump-set for some years but extreme drought like conditions for the past few years has made things extremely difficult. His focus now is on the conservation of water and techniques which make do with the minimum moisture for optimum results, presently irrigation is through micro sprinklers. He has a biogas plant and a female buffalo on the farm which partly meets its dung needs.

On the dry land he earlier grew jowar, groundnut, soya bean, tobacco and pulses. However for the past few years things have been difficult.

On the three acres which are partially irrigated, there is an unbelievable diversity of species.

Around the farmhouse one has to search for small pieces of cultivation as you see trees all around. There are over 50 varieties of trees, to name a few: teak, sandal, coconut, citrus, orange, lemon, jamun, tamarind, papaya, custard apple, ramphal, banana and a host of flowering trees and plants.

As a fence and on bunds he has grown glyricidia. These leaves along with the grass growing in the farm forest and other abundant biomass form the base of his compost and mulching process. Part of it is mixed with the biogas plant slurry to feed the earthworms. This varied organic manure facilitates healthy plant growth.

The Chikodi-Nipani area is famous for its rich tobacco and betel leaves. The soil and the climate are just right for these cash crops. For around five years, however, this farmer had stopped growing tobacco on principle, because smoking is an unhealthy practice, but because of the difficulty in cultivating other crops he has had to revert to some tobacco cultivation.

For protection from pests, Diwakar has used a combination of farm animal urine, the juice of neem, green chilies and garlic. At first, people were sceptical about his experiments but now agree good tobacco can be grown without chemical fertilisers. The maya pest has been controlled by these methods. However, monkeys and peacocks who visit in hoards keep him in a state of unrest.

Inspired by a magazine called Aarogya (health) published by Aarogya Mandir, Gorakhpur, he started a mini-nature cure centre on his farm. In the initial years, the extremely low fees attracted many patients who were satisfied with the simple set-up and effective treatment. It even had staying facility for extended treatments using sauna baths and mudpacks. His most remarkable achievement was curing his wife of a paralytic attack. She survived six years after the attack and remained active without the use of a walking stick until the last. These days he still extends his medical services to all who seek it. He believes they come to him when all other treatments fail.

Over the past few years his philosophy of growing food has evolved into a sadhana. He is experimenting with being self-sufficient in food. On a part of his farm he now grows vegetables, spices, fruits, cereals and pulses. In short everything that he thinks he would possibly need for his nutritional requirements. He says 'I am not farming anymore and I believe one cannot farm. All one can do is create a conducive environment for plants and trees to grow and mother-nature does the rest.'

This octogenarian still practices yoga each morning and is actively involved in physical work for eight hours of the day. Having lost his wife a year ago and being subsequently cornered by his family to 'retire' he declines saying, 'I'm not alone, I sleep well in the lap of mother-nature and have all the trees and plants as companions.'

He believes that organic farming is not a method of cultivation, but a way of life.

(Source: Communication and Tele-interview with OIP)

M.T. SHANTIMOOLE

Savayava Farm, Post Pailar, Taluka Sullia - 574 248, Dakshina Kannada. Ph: 0825 – 284601/320563

Shantimoole has about 45 years of experience in farming. About two decades ago an incident made him change the way he farmed. At that time, for three consecutive years he had been farming using chemical fertilizers. One day he saw an army of ants carrying away dead earthworms. Just a few days earlier he had applied chemical fertilizer to his coconut trees and that made him question the sense of what he had done. That very day he said goodbye to chemical fertilizers and tried to adopt a new method of farming.

In search of a suitable guide he came upon a book on the experiences of the Japanese, Masanobu Fukuoka. After that he left the land as it was for two years. Later he adopted the NADEP compost-making system and covered the entire farm with compost and also applied neem fertiliser.

Nowadays he does not need compost in such great amounts. The entire farm is full of earthworms and other microorganisms. He only prepares some compost for growing vegetables. To demonstrate to school children, he also practices vermiculture. He bid goodbye to farm labourers as there was not much work for them. What he gets from the land to take home is free.

The crops that he grows now range from coconuts, areca nut, cocoa, coffee, bananas, black pepper, fruits, flowers and also plants of medicinal value. Irrigation is his only major job but even that is not very much. What he gets from his three acres today is much more than what he used to get earlier.

How did this happen?

The millions of microorganisms and earth burrowing worms in one metre of soil do all the work necessary to fulfill the needs of all kinds of plants. Whatever 'leftovers and rubbish' are found on his land, he leaves them there, thus assisting micro-organisms in the preparation of fertilizer. If farmers do more work than is necessary, he feels they are wasting their time.

When the earth is covered, it is protected from the heavy rains of the monsoons and the scorching heat of the summer. A variety of grasses and creepers grows on his land. In the monsoons he cuts all the 'unwanted' plants and leaves them where they are. All kinds of refuse is used to cover the land. Sowing different kinds of useful varieties of legumes in the empty spaces makes it a big expanse of greenery and increases the wealth of the land, i.e. its fertility.

The neighbouring farmers say that their land is so clean that one can spread out a blanket and sleep on it. But Shantimoole says that you don't even need a blanket to sleep on his land. By planting different kinds of plants, trees and creepers, all over the land he has tried to protect the core farming area from sun and wind. A few seeds of *Mimosa invoica* that a friend of his had sent him have multiplied and covered his land, protecting it. Now, whoever wants can take as many seeds from him every year in the month of December.

'Humans in their desire to become rich fast, have used chemical fertilisers and pesticides and killed the natural workers in the soil. If we let our land be, just as in the forests, then all kinds of fruits, flowers and grains will take root by themselves and fill both our stomachs and our pockets,' is how Shantimoole sums up his philosophy.

Shantimoole shares his success in tapping and utilizing the potential of a wild plant to enhance the properties of a planted crop.

From early times a small chili has grown wild in India, an extremely spicy species that birds are very fond of eating. This chilly has been used in the preparation of ayurvedic medicines, for the use of humans as well as animals. Nowadays this chilly is being used in other countries also. The chili plants that farmers grow in their fields stop fruiting within a period of six months only but this wild species continues to bear a harvest of chillies even after four years. That is why Shantimoole decided to try and combine the characteristics of the wild species with the larger chili variety that was generally grown. He took the pollen from the flower of a larger chili variety and pollinated the flower of the smaller variety. The seeds that were gathered from the chili of this mixed plant, when planted, resulted in a slightly larger variety of chili on fruiting. This process was repeated through a few cycles. He says he now has a chilly variety that is as large as that generally being planted by other farmers and one that continues to fruit for four consecutive years.

Shantimoole in his areca nut garden

(Source: Communication with OIP).

SURESH DESAI

Organic Farmers Club, Bedkihal, Chikodi Taluka, Belgaum District – 591 214, Karnataka. Ph: 08338-261052 Cell: 09480448256

and

Global Green Agricultural Society, Swastik Plaza, Behind Pearl Hotel, Tarabai Park, Kolhapur, Maharashtra

Suresh Desai has achieved a production miracle in organic sugarcane farming through an innovative mulching system devised entirely on his own. His approach is that whatever elements are essential to sugarcane (or any other crop) should be supplied through the medium of a multi-mix of vegetation that has decomposed. This is achieved he says by microbial saturation, catalyzed by mulching, in the treated soil. This resulting biomass product of mulching is known as 'Aurogreen' in honour of the activities of the Maharishi Aurobindo Ashram.

'Aurogreen' is a mixture of nitrogen fixing legumes such as green-gram, horse-gram, black-gram and beans, oil seeds such as sesame and karla (black sesame), chili and aromatic seeds such as dhania (coriander) and other such locally available greens.

There is a certain proportion in the quantities of various seeds which are to be grown using the Aurogreen mulching method. For a land of around 40 gunte (1 acre), five kg horse-gram, 1 kg dhania, 200 grams rajgira, 200 grams black sesame, 200 grams white sesame, 500 grams methi, 1 kg black gram, 500 grams chili, 1 kg green gram, 500 grams beans are to be mixed and sown in the spaces between each rows of the main crop. When these germinate and some growth has been achieved, this supportive vegetation is cut down and mulched below the canopy of the plant of the main crop.

Suresh Desai: a master organic farmer of Karnataka

Non-leguminous mulching biomass in which the C:N ratio is over 120 should be avoided, because it does not provide essential elements in the proportion needed. In Aurogreen mulching the C:N ratio is maintained between 20–30, which is most suitable for developing sufficient quantities of micro-organism species, leading thereby to rich bio-diversity in the soil.

Of the mixture of supportive vegetation, coriander and horse-gram are primarily used for their medicinal properties. On the surface layer of each leaf are acids, namely oxalic and malic acids. These two acids are the basic bond of a variety of amino-chains, which have important medicinal characteristics. In comparison to other green, leafy vegetables, coriander leaves and stems have several more micro and trace elements in organic and degradable forms for the bacteria and fungi in the soil to feed on.

The spacing between two sugarcane rows as well as each sugarcane plant in a row is kept at nine feet. Each of these give around 10 sprouts which works out to around 40,000 plants per acre of land. The population thereby reaches the same quantities as that planted by farmers using chemicals. Significantly, the direction of planting is kept in a North-South direction ensuring that all the leaves of the sugarcane as well as the Aurogreen vegetation on the land get the maximum amount of sunlight. The heat generated by this is good for the mulching process. Because the leaves are exposed to direct as well as indirect, percolated sunlight, the process of photosynthesis is enhanced, leading to greater production of food/sugar content in the plants.

The tonnage of sugarcane achieved by Suresh Desai is substantially higher than that produced on chemical farms. Besides this, his methods have ensured a big saving in water usage for a crop which has always been known to be a water guzzler. Nine to 10 irrigations for the entire duration of the crop are now sufficient because the soil has increased its capacity for retention of water. The soil becomes rich in organic matter and in, as he calls it, a bio-film – a rich, loamy layer of soil that is densely populated, not only by earth fauna, such as earthworms, but one that is taken over by entire colonies of beneficial fungi, aiding and enhancing the process of decomposition.

Though having done only secondary school, this farmer aged 57 is a voracious reader and an enthusiastic experimenter. Inexpensive farming has interested him from the beginning. In 1972 he began thinking that green bio-mass could be given directly to plants instead of composting! In 1973 he stopped burning the 'waste' on all of the 12 acres on which he grows sugarcane. He made use of the green bio-mass to cover the land rather than putting it into the ground. He also thought that drip irrigation was an expensive proposition and so devised an 'appropriate technology' using the same principle, viz. not allowing the water to sink too deep into the land but instead seeing that it flowed parallel to the land and fed the plants. He says that just as chemicals put into the land kill microorganisms and ruin the fertility of the soil, excess water too proves fatal to these microorganisms.

The most remarkable feat of Desai is that, besides being a successful practitioner of his principles, he communicates the science and art of his techniques in a simple lucid manner to one and all. His recent initiative in this direction is the development of an organic farming training package that is being offered to farmers around Kholapur in Maharashtra. Spread across Kholapur district are many demonstration plots growing various local crops exhibiting his innovative farming methods.

Mr. Desai is working in collaboration with Mahila Arthik Vikas Sangathana in five districts of Maharashtra promoting kitchen garden farming amongst rural women. Through this endeavor women are able to generate Rs. 30,000 to Rs.40,000 annually from their kitchen garden produce in small 15 to 20 gunta plots. There is also a proposal of developing a buy-back system for farmers that is under finalisation.

His recent innovation is in light and air harvesting technology. According to Mr. Desai there are four vital factors that affect crop yield: light, air, soil fertility and water. Farming has stressed so far on soil fertility and water, which though important play only part of the role in obtaining good yields. As a consequence, farmers have over used fertilisers and water. He believes that this over use is firstly not required and secondly causes growth of weeds, kills soil microorganisms leading to disease in crops. His emphasis now has been to introduce strip farming and low inputs of water. Apart from this he is conducting experiments in making optimum use of light and air which are freely available and can be put to optimum use if one follows a relevant sowing pattern depending on the crop. He is in the process of writing a paper on light and air harvesting technology which is available on request. Sugarcane cultivation being his specialization, his research indicates that a combination of sugarcane and turmeric planting has a 'lichen-crop pattern benefit' meaning they enjoy a symbiotic relationship ensuring high yields of both.

Suresh Desai is basically an institution in himself. Like all pioneers, he has worked on his own without much assistance from Government officials or universities, to perfect his system of organic farming in the growing of sugarcane and spreading the word widely.

Mr. Desai is presently the Vice-President of Global Green Agricultural Society, Kolhapur, Maharashtra which primarily works towards disseminating information on organic methods and an active working member of the Organic Food Club, Yamakanmaradi. He was honoured for his work by the Government of Karnataka as Krishi Pandit for the year 2005-2006. (Source: Communication with OIP)

JULI AND VIVEK CARIAPPA

Krac-a-Dawna Organic Farm, Halasur Village, Birwal
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When the winds of fortune blow two unlikely souls into a partnership of perfect amity, people exclaim 'but, how did you do it?' Absurd temptation to give a ludicrous answer often crosses our minds. Instead, we are intrigued that testimonies of honest hard work yielding achievement are so surprising to many.

It's hard work to dream of a world worth living in these days. Especially when you corner yourself into duty and a 9 to 5 job, encircled by plastic, cement and steel that say nothing of the earth below, where you come from and where you will go some day. And between the coming and the going what have you to show for it and whom are you going to show it to, for what? I guess that's why we got our act together and started to dream.

Dreaming is a risky business. It makes you want to do things and when you are twenty with life's passion pulsing through your body, flowing in you mind, doing risky things seems like a wise idea. So we got risky, gave up our jobs to more worthy contenders and went searching for the holy grail.... A place to set down our dream.

This dream involved finding out about whether all this talk of our earth dying before our very eyes was true. It is disturbing to be just beginning your adult life and hear pronouncements regarding its very futility. So together, unlikely and impossible, armoured generously with love, we began our walk to the other side.

We found some land. Beautiful, hopeless, stony soil bordered by a trickling river and crowned with a naked hill of thorns. We thus challenged our earth, giver of life, to show us she was dead. We built a small stone house among the nakedness and began to plant trees, till the soil, sow seeds... You think we knew a thing about planting? We did not. But, we knew how to dream. That power made the two of us learn faster and work harder. We worked fourteen and a half acres of land with two pairs of hands, never giving up hope. Insane. Once we bungled things so badly that we had only 73 rupees left to survive an entire month, but Juli made stone soup and we got by. Along the way we quickly learnt that farming is perhaps the most under-valued profession that exists. Its complexity challenged us to innovate at every turn and continues to do so.

One part of the dream became a crusade. We vowed never to use chemicals, fertilisers or pesticides on the land. We have managed to keep that promise. Imagine eating a whole meal grown solely by your own effort, on your own land, without Malathion, lindane, DDT, or Roundup!! It`s a marvellous feeling... good for the soul and a lot else too.

Over the years we realized that the conventional agricultural model has not been an efficient design for small farming, which makes up the majority of agrarian economy in India. Principles of seed-saving, multiple cropping, integrated and inter-dependent animal and soil husbandry, optimal utilization of animal and plant-waste, small-scale food preservation and storage and ultimately the cornerstone of strong community – family participation, have no value in the new scheme of things. Chemical agro-inputs have been terribly abused because their effects on the soil and ecological balance have been mis-understood. In the end, although our national food surplus is statistically pleasing, rural India is more food insecure than ever before and steadily losing its ability to survive in a 'free-trade' world, let alone fight for its share of resources.

Rural children are taught to yearn for city jobs and urban lifestyles and in a population of 1 Billion +, with all the cards stacked against them, they are unlikely to achieve their dreams. Instead, society will reap their anger and hunger not to speak of the collapse of rural economy. Our own children do not go through the conventional schooling system as the rural negative bias is very strong in the Indian system. As they grow up and work beside us on the farm they are aware that they are different. Their bonding with the Earth already tells us that they love her in a special way that we do not know. Hopefully they will be proud, innovative citizens of a healthy farming India, in their time.

Even our own experience has been a struggle with all the advantages of education and background that we have. We have had to learn not only how to farm per se, but also how to survive as a farming family. It has become clear that the sustainability of our operation depends on the diversity of our crops both from the aspect of establishing a fundamentally stable ecology on the farm as well as in terms of optimising energy inputs to sustainably maximise fertility, bio-mass and crop out-put.

From here on began another saga. The 'how to maximize the monetary RETURNS from our produce' question. During the first two decades of our farming experience we developed a value addition system that helped us to ensure that nothing left our farm in its raw state, we tried to get the final produce to the consumer ...directly. The grains are sold as flour, the perishable fruit as jams and jellies, the sugar cane as jaggery powder ,the coconuts as cold-pressed coconut oil, soap and the cotton as hand spun vegetable dyed fabric and garments. This takes a lot of our effort and imagination, but it has also improved our economic viability and our sustainability in the market society, where every thing is for sale.

Our cotton story in particular, illustrates the challenge and extraordinary effort we have had to put in to turn around the view of cotton growing as a losing proposition (as it is for small growers of raw cotton), into a highly integrated rural product benefiting rural society as a whole. We chose to grow cotton 19 years ago because it was a major crop in our area, consuming 60% of the national pesticide use. It took us several years of field trials before we could feel sure we were on the right track, but we finally grew good organic cotton and then were faced with the dilemma of what to do with the damn thing! It was completely demoralizing to consider selling our organic cotton on the conventional market.

Our age-old tradition of KHADI or home-spun was staring us in the face. In the first years of our journey into creating what we now call 'sustain life' textiles, we had trained a team of women locally to spin our cotton. This became unviable eventually as the activity required a stamina which was too challenging in an agricultural community which was too busy trying to survive. Now, in a world of ever increasing scales and volumes we attempt to spin our cotton in spinning mills which can provide us with a service of segregating our cotton and ensuring the yarn we get back is from our own cotton. The challenges are always there to keep our small production viable. Once our yarn is returned to us it is then sent to a weaving village in Kannur district, Kerala where 3rd and 4th generation handloom weaving families help us to convert our yarn into a wide variety of fabrics. We have trained ourselves in traditional vegetable dyeing and the art of shibori tie and dye and produce about 3000-5000metres of cloth from 3 to 5acres of cotton not to mention growing and extracting many of the vegetable dyes on farm). Our fabric is transformed into a number of different styles by urban women tailors and from beginning to end Krac-a-Dawna cotton ends up weaving together about 50 families, the majority of whom are rurally based! In 2008 we were able to produce possibly the only truly handmade indigo jeans. Even our coconut buttons are produced by local artisans from Kerala. The 'sustain life' cotton story will, we are sure, further evolve as we meet the challenge of creating a quality product in an ever-changing and fickle marketplace.

Krac-a-Dawna organic farm at present covers about 30 acres of land and grows, besides hedgerows and wild species of shrubs and trees, about 30 different kinds of crops, to which we value-add on-farm in one way or another. On a regular basis we employ six persons besides our selves and sell produce to at least 100 families locally in Mysore and other cities. For six years now we have participated in a bi-monthly green market and also supply many of our products to a growing number of eco-shops around India.

Most of our inputs are produced on- farm (such as vermi-compost and biodynamic compost) and these are enhanced by sustainable biotechnologies. We depend heavily on green manuring and cropping systems which utilise different yet mutually beneficial types of crops including, horticultural and plantation crops. In most cases we do not produce more than two acres of a single crop at one time and even these are generally inter-cropped with short-term crops like pulses, especially in cash crops.

Crop-protection is defined largely by careful soil management. It has been our experience that organic farming in itself is a tool to correct pest imbalance. Frequently pest problems are easier to control because the diversity of plants diffuses the situation quickly. Along with this we attempt to plan our sowing with respect to moon-phase activity and known pest peak periods which helps to reduce critical situations. Additional plant-derived pest control is occasionally used when the above systems prove inadequate.

As much as possible, we try to use seeds that are grown by other organic farmers or ourselves because the seeds produced for conventional farming are designed to respond to chemical inputs. However there are a few crops that we do grow from commercial seed for a lack of any other alternative.

Weed-control, intercultivation and successive planting using manual, mechanical and powered tools have proved to be an effective combination. Shallow tillage, whether bullock-drawn or using a small tractor, has conserved our soil and rehabilitated its natural self-sustaining mechanisms. Practical realities are the best motivation to constantly innovate and develop better techniques.

Every year we find the complementary relationship between the soil, crops, animals and humans requires less effort to maintain. This is proof of sustainable design; that no one part deprives another part of its ability to access the basic requirements of healthy living.

For many years Krac-a-Dawna has been evolving into an ever more beautiful and productive space for all the creatures who depend upon her. As her human family we have been ever grateful to be part of this experience and have tried, at every turn, to make choices that regard her overall health and vitality as the most important criteria in our decisions. Our children Kabir, Azad and Sukanya like the trees on Krac-a-Dawna, are spreading their branches in all kinds of ways knowing fully well that their roots are firm and well-nourished.

About four years ago, our eldest son Kabir (now20) went to a biodynamic agriculture course in Kodaikanal and spent a week with our friend David Hogg, a long time bio-dynamics practitioner. As a young person raised in the spirit and born into organic living, Kabir came back from the workshop bubbling with Peter Proctor's enthusiasm and speaking with remarkable fluency about the effect of planets, moon and sun movements on the earth, thanks to Rachel Pomeroys' good teaching. He felt we should apply some of the techniques he learnt there to energise the soil in an even more optimal way. Believing that the instinct of a child raised in organic farming was to be respected, we all agreed to take part and learn whatever there was to learn from Steiner's teaching.

Krac-a-Dawna is a place that was never 'ideal' for agriculture. It is stony in most parts, uneven, hilly and with a very thin layer of soil in many areas. Our diversity in crops, mixing horticulture, agriculture and plantation crops was really our salvation. The mixing of crops had the two-fold effect of revitalising the soil, while maximising the utilisation of whatever was there. Through the seasons this further effected a spiralling cycle of aeration, humification and water holding capacity in the soil while the microbial life returned en-masse thanks to the regular green-manuring, vermi-composting and mulching we practised. We were doing well, but our harvests were never quite as good as they ought to have been; the healing was taking place no doubt, but it was slow. Years of soil and wind erosion as well as de-forestation prior to our stewardship had taken a deep toll that was not going to recover quickly. It was at this juncture that biodynamic principles as well as the application of panchagavya began to take effect and literally, turn the tide.

Within the first three months of using biodyanamic preparation 500 and 501 and applying panchagavya at critical intervals there was a distinct effect. We thought we were imagining the heightened sense of wakefulness in the life around us until several visitors who had visited us before, remarked 'something has really changed on this farm' .... 'everything looks so green and alive!' When the food began to taste different and the solidity of the produce reflected an ability to withstand pests and diverse weather conditions we realised that we were not just dreaming it all up.

It was probably the sugarcane and cotton that finally verified that there was a qualitative difference in the performance of the living energy of the microcosm of the farm. The harvest of sugarcane brought a 30% increase in sugar yield and the cotton fibre was tested to show there was a substantial increase in the tensile strength of the fibre besides an increase in yield. Almost across the board we were seeing a comparative qualitative improvement in our almost 30 different crops which required almost no intervention in pest management, had better keeping quality and definitely improved taste as frequently told to us by our consumers. Much of these improvements were also influenced by our increased understanding of the cosmic rhythms with relation to the earth's seasons. The subsequent years have also seen a remarkable difference in the health of our animals and our own bodies seem to be more resilient and have more stamina. 2007 brought us to the point where we are producing our own cowpat pit, BD 500, BD 501 and our own formulations of panchagavya and jivamrutha which are essentially ancient Indian liquid soil conditioners that can be made by any farming family.

The last few years have also broadened our experience to embrace many other farming families in our taluka who have asked us to help them develop a strategy to make a transition to organic farming. Thus was born the Savaiyava Krishikara Sangha(SKS) with a present membership of 150 farming families. For many years we had waited for other farmers to want this change. Often we were criticised for not going out and 'converting' other farmers, but we believed that the missionary way was best left to missionaries and when the time was right we would be ready with a model not only for organic farming but family based organic farming and living. We have developed a unique internal self-assessment system based on our own experience and earlier organic certification with JAS (thanks to the inspired thinking of Kihata-san) which is implemented through record keeping, farmer inspections and monthly meetings to discuss a wide variety of issues regarding the growing and marketing of our produce. We are all under a group certification with IMO; Krac-a-Dawna is the model farm where all the different techniques we use are a resource for the entire group. Some families have even adopted some bio-dynamic principles but the process of transition is different for everyone. The important thing is that these farming families are developing sustaining strategies to take care of the land and feed their own families; in befriending the land we all tend to change the way we view ourselves and the life around us. We change, we breathe easier, we grow, we learn to live in harmony with the earth and the cosmic rhythms.

We have now been farming organically for more than half our lives and one could almost say the transformation has been complete. We are not the same creatures we were 24 years ago. As we grow older, we begin to see that the most important things are the ones that are gradual and are likely to have a long term effect. Our business relationships, whether with our consumers or with buyers small or big, are ones that take the long view. With them we build the soil responsibly, with us they can make responsible investments for the future of the Earth. This is largely why bio-dynamic composting and vegetable growing have become important things to do here. Building soil, improving air and water quality and building healthy plants, happy animals and happy people are the most lasting things we can do for this planet.

Juli and Vivek Cariappa, farmers by choice. (Source: Communication with OIP)

VARANASHI FARMS

Adyanadka - 574 260, Dakshina Kannada District, Karnataka. Phone: 08255- 270254/270686, Fax: 08255-270686 E-mail: varanashi@sancharnet.in/ info@varanashi.com, Website: www.varanashi.com

The 30 hectares Varanashi Farms (VF) is located in Bantwal Taluka of Dakshina Kannada District, bordering the State of Kerala. The farm is situated about 25 km from the sea coast. Dr. Varanashi Krishna Moorthy, an agriculture microbiologist and Ms. Ashwini Krishna Moorthy, a specialised ecologist, jointly manage this farm.

Areca nut is the main crop, followed by coconut and rice. Cocoa is extensively inter-cropped with areca nut. Pepper and banana are also inter-cropped. Cashew nut is grown in the dry upper reaches. Vanilla was introduced in the early 1990s and it has been inter-cropped with areca, cashew, coconut and other forest tree species. Vegetables are also grown throughout the year for self consumption. Apart from these, teak, Acacia aureculiformis (acacia), mangium, mahogany, bamboo, jack, casuarina, etc., are grown along with other existing forest trees, making the environment very natural and eco-friendly.

The farm was converted to organic in the early 1990s and this was found to be sustainable, both from the point of view of yield as well as income. The soil also has become more fertile with a higher content of humus. Pests and crop diseases decreased considerably after the switch over to organic farming.

The successes of soil and water conservation techniques adopted here have drawn the attention of other cultivators around. In the 1990s, seven acres of areca nut, in one section of the farm, used to receive irrigation only once in 20 days, during the late summer season, reducing yields considerably.

To improve the situation several measures for rainwater harvesting were begun, such as the construction of catch pits, percolation ponds, madakas and check dams. This has helped recharge groundwater sources and bore-wells. Today, the area under irrigation is more than double with a fairly big nursery in operation and all the workers' houses getting water supply. Despite this increased consumption, sufficient water was available even during the severe summer of 2003.

The construction of a temporary barrage (115ft long & 10ft high), across the adjoining Seere River, in 2003, helped water accumulate along a 1.5 km length of the river basin. The dam was constructed using sand bags and plastic sheets instead of the normal practice of stones and mud. This improved system,

Varanashi Farm's water harvesting devices

in comparison to the traditional 'Katta' (barrage), was constructed with less money and labour.

Water conservation techniques include: the collection of waste water from all sources such as hotel, household and bathroom washings and using them directly, or along with the slurry from a gobar-gas unit, for irrigation and manuring purposes. Recently three units for utilizing toilet waste by digestion in RCC septic tanks were installed. The ultimate plan may be to supply, through micro-pipes, water/nutrients from here to crops like areca, banana, cocoa, etc. With all these steps the situation has turned from one of water scarcity to surplus.

Varanashi Farm has recently become the hub of many trainings, workshops and demonstrations of farming techniques. Compost preparation by the VRF method, developed in the mid-1990s, has become popular amongst cultivators of Kodagu, Dakshina Kannada, Chikmagalur, Hassan and Shimoga districts, resulting in substantial savings every year in the manure bill for growing of coffee, cardamom, areca, cocoa and other perennial crops.

Growing multiple crops on Varanashi Farms and adopting organic farming methods, has brought the farm closer to a forest eco-system. In this way the land inherited from ancestors is being gainfully used and will be passed on in a safe and sustainable condition to the next generation. VRF is presently engaged in building a model organic village.

(Source: Communication with OIP)

VARANASHI AGRO-SUSTAINABLE TECHNOLOGY CENTRE,

Adyanadka, Dakshina Kannada – 574 260, Karnataka.
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Varanashi Agro Sustainable Technology (VAST) Centre is involved in the manufacturing and marketing of the following eco-friendly farm inputs developed by the Varanashi Research Foundation(VRF), a R&D organization recognized by DSIR, Government of India.

KAILASH MURTHY

No. 12, 9th Cross, Adhi Sakhi Road, Shakti Nagar, Mysore – 570 019, Karnataka.

Several national dailies and other sundry newspapers have all carried the story of Kailash Murthy in their papers, at one time or another. When this bank employee by profession and farmer at heart took to farming he began with chemicals which, at the time, seemed to him to be the conventional and tested wisdom. Though the harvest then had been good, he soon became aware that the fertility of the soil was deteriorating. He was also concerned with the poisons that were going into the earth and foods.

It was around this time that Kailash was struck by the profound truths written by Masanobu Fukuoka in the book 'One Straw Revolution' that he happened to come across. Kailash immediately gave up chemicals and took to natural farming. In Doddinduvadi village, 10 km from Kollegal, Charmrajnagar District, a region which has been reeling under successive drought conditions, he now shows the way to despairing farmers: the path to success in farming with the least physical effort and the least expenditure; zero input and great output.

'Not much investment is required as everything is left to nature,' says Kailash. 'Farming is not done by human beings as we think, but by tiny creatures like earthworms, ants, birds and microbes which are abundant in nature.' A scoop of soil from his farm can be observed to be rich in earthworms and other soil life. The farmer follows the no-interference rule to its maximum. A fallen tree is allowed to lie and rot and become a part of the soil. Unlike other farmers he does not like to disturb anything. The sight of some bananas eaten away by animals does not trouble this radical farmer who merely mutters under his breath that animals too have a right to food. An abandoned well at one corner of the farm seems to be a home for snakes from the number of skin molts observed. Kailash refuses to disturb the snakes as well!

Kailash has been experimenting with natural farming on his 6.5 acres land since 1988. His farm looks more like a diverse forest, with hundreds of varieties of plants including food crops and 60 varieties of edible plants with medicinal properties.

Kailash Murthy, wife and friend in their do-nothing farm

The benefits of natural farming include savings in the cost of fertilizers and pesticides and even manual labour, as this kind of farming requires no ploughing or weeding. Nothing is borrowed from outside except electricity to pump up water for his farm.

To prove that natural or zero farming should be promoted all over the country, Kailash conducted successful trials of growing three different varieties of paddy with an average yield of 30 quintals per acre of sown area. He thinks the notion that, natural farming is neither profitable nor commercially viable should be dispelled.

And finally adds, he was fortunate enough not to go to an agricultural college. (Source: Communication with OIP)

DR A.N. NAGARAJ

71 Bheemanakatte, Post Doorvasapuram, Taluka Tirthahalli, Shimoga District—577 432, Karnataka. Phone: 08181-229037, Email:akkinaga@gmail.com

Dr. Nagaraj served the FAO in many countries for several years. One of his work assignments was based in the U.S.A. where he lived for eleven years. The western culture of exploiting natural resources and manipulating nature especially in the field of agriculture through introduction of chemicals into farming had a deep impact on his way of thinking. Around the time he also read *Silent Spring*, reflecting the ravages done by pesticides to crops. He resigned his job and returned to India in 1973, in a way to make amends with mother-nature. For a decade now he has been living at Bheemanakatte and experimenting with natural farming on his two acre farm. The farm is essentially a fruit orchard with sapota, mango, jack, fig, banana etc. areca and coconut are being grown as a revenue generating component on the farm. His farming practice is more on the lines of Fukuoka and the only input of the farm is in terms of mulching.

The experimental farm caters to local visitors and farmers who come to discuss farming techniques with Dr. Nagaraj. Visitors are welcome with prior intimation.

(Source:Teleinterview with OIP)

DR ANAND TITUS PEREIRA

Anand Estate, Sundekere Post, via Saklespur, Hassan District—573 134, Karnataka. Ph: 08173-329231.

According to Dr. Anand: 'We have a medium sized 100 acre farm. The main crop is coffee (Robusta) along with multi crops like arecanut, cardamom, pepper, coconut , banana and orange. Due to the acute shortage of labour, we have converted our rice fields into arecanut gardens.

'The back bone of the farm is the organic matter content in the soil system, built up over a period of many years.'

Dr. Anand is an expert on organic coffee, no one we know has studied it as consistently and documented findings as meticulously. He has also carried out extensive research on biological nitrogen fixation, azolla and paddy cultivation and has held various demonstration trials on the safe use of organic manures. He has several published papers to his credit. One can find his technical papers on growing coffee on line at www.ineedcoffee.com and www.indiacoffee.org

(Source: Communication with OIP)

A.P.CHANDRASEKHAR

Indraprastha, Kalalavadi village, Post Udbur, Mysore - 570 008, Karnataka. Ph: 08251-2597936

Chandrasekhar is a self-made man. A mechanical engineer by training he followed that profession for only one year and thereafter took to farming. He confesses that he finds himself being daily educated and entertained by his closeness to nature.

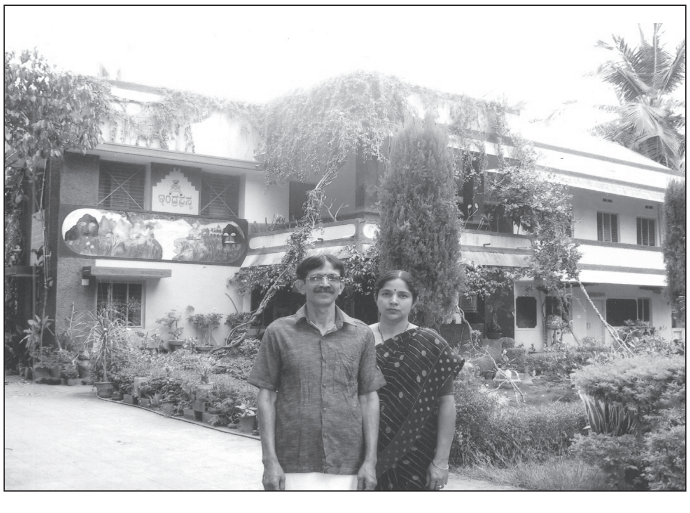
He has worked a 13 acre farm for the past 25 years, nineteen years of which have been as an organic farmer. He has more than 2,500 species of plants on the farm, growing everything that can grow. His main crops are a combination of coconut, arecanut, lemons and vanilla. When he purchased the land it already had coconuts so he added several new varieties besides a host of other plants. Everything is intermixed.

The plants can be broadly classified as commercial, medicinal, ornamental, food crops, tree crops, shrubs, creepers, tubers and grasses. Besides coconut, there are areca-nut, mango, banana, chickoo, pomegranate, coffee, paddy, turmeric, tamarind, ginger, arrowroot and collocacia plants grown on the farm. In each of these, there are several varieties. The farm has 200 varieties of fruit trees, 300 varieties of edible leaf plants and around 100 varieties of tubers.

Chandrasekhar's aim is to get as many varieties of a plant as he can so that the farm can become an imitation of a forest. Native varieties come up on their own but he keeps a sharp look out for new varieties and adds them to his farm. He has a plant with leaves that are salty to taste and an edible cactus too.

The farm is irrigated with water from five ponds. There are pump-sets and pipes etc., but every year he has been reducing the irrigation. Half an acre of land has been left free for Mother Nature to grow what she likes on it. Nothing is done on this half acre, no irrigation, no manure or anything else. However a variety of 20 to 25 crops have come up on their own through natural seed propagation. Chandrasekhar watches and learns from nature how she is taking care of this land. He feels confident that the natural way of farming is entirely possible. Some crops will require irrigation, but not all.

When he started farming there was just three to four feet of water in the wells in summer. Now because of plant diversity,



A.P. Chandrasekhar and wife have been persistent and innovative organic farmers because he uses less water for irrigation and because the land is covered with all manner of trees, plants, creepers, and tubers etc., the water harvesting capacity of the land has greatly increased. Even in summer there is now 15 feet of water in the wells and during the monsoons it reaches its full height of 25 feet.

The produce is sold either directly or by adding value through processing. Ten persons are employed on the farm and at least one hour everyday is spent on processing the produce into juices, jams, dry fruit, medicinal powders, tooth powders, herbal bath powders, coconut oil and soaps, etc. Chavanprakash is also made utilizing around 50 herbs. The produce is sold through NESARA, an organic products outlet at Mysore.

Chandrasekhar believes that in organic farming, techniques are irrelevant. Organic farming means fewer and fewer techniques. Therefore he has reduced irrigation, doesn't do vermicomposting and does not even plough except for growing paddy. Yet the farm is surviving very well. Insect problems are there but not serious. Even if the crop is attacked by insects, there may be no crop for sale, but there is enough for personal consumption.

He has 15 cattle of both local and cross bred variety. They are meant more for manure than for milk. He has a breeding bull too. He feeds them with coconuts and tubers which cannot be sold and this reduces the cost of feed. Even though he does not press for high yields of milk he sells about 10 litres of milk everyday. Ghee is also prepared. Bees have also been kept and there is honey for sale. A small workshop on the farm caters to all the smithy, welding, repair and maintenance needs of the farm.

Self sufficiency is thus the key to the success of Chandrasekhar. He says that he has learnt to do everything from hair cutting to slipper repairing and has functioned without debts and without taking any loans. He is the author of two books: Kumkumadinda Kranti (Revolution by Organic Kumkum) and Navu Prabudharaguvudu Yavaga (When We Become Realized). He regularly writes for the local papers on organic farming, nutrition & cookery as well as environmental issues.

(Source: Tele-interview with OIP)

A.N. CHANNAPPAGOUDRU PATIL

c/o T T Patil, Belur Village, Post Kataraki, Taluka and District Koppal, Karnataka. Cell: 09972194847

Channappagoudar has been involved in organic farming for over two decades. A retired Block Development Officer he first tended to both his farms, one in Bannikoppa village in Yelaburga taluka and the other in Belur village in Koppal taluka. Subsequently, he shifted his study on application of sustainable farm practices under an organic farming system to Belur village.

Channappagoudar's aim has been to study how to combat conditions of drought using the most sustainable practices in an organic farming system, avoiding completely the use of chemical fertilizers and pesticides and making the agricultural occupation a profitable business, whatever the conditions of climate, rain and soil.

Organic subflower on Channappagoudru Patil's farm

His farm is divided into different cultivable areas and plots depending upon factors such as the slope of the land, the type of soil and the depth of the topsoil. Plots are leveled without unduly disturbing the top soil in order to conserve all the rain that falls and to maximize its percolation into the soil.

The principle of recycling organic matter is followed. After harvesting, all crop residues are recycled into the land under cultivation through composting. Whenever there have been favorable conditions such as early rains, green manure crops like sun-hemp, horse-gram and coriander are sown and ploughed back into the soil either directly or after composting. In the past 20 years, however, such green manuring has only been done five times as it is dependent on limiting factors such as timely rainfall, feasibility of sowing time etc.

Vermicompost has been applied every two years in some plots, to study the cycle of hatching of eggs and cocoons and arrive at optimum conditions a soil must have for it to become self regulating and productive in terms of organic content and fertility.

Crops that are sown are chosen to suit the soil conditions and the available rainfall, which may differ from time to time.

Along the above guidelines, the following observations were made in the trial plots as compared to other plots in a studied year.

Crop	**Yield in trial plot**	**Yield in adjoining fields**
Wheat	1quintal	Less than half quintal
Rabi Jowar	2 quintals	1 quintal
Sunflower	11/2 quintal	1 quintal

(Note: Rainfall during the year was approximately 400mm. Around ten years of application of organic methods had preceded the studied year.)

Besides the increased yields of some crops as mentioned above there have been other benefits as well such as increase of the organic content in the soil that has helped control pest attacks and diseases. Drought conditions in a dry-land farming scenario have been mitigated up to the extent of 60-65 percent. There has been an improvement in input and output ratios. The moisture holding capacities in root zones have improved, resulting in an improved seed rate for sowing. Groundwater levels have stabilized due to water harnessing and soil conservation techniques.

Channappagoudar is confident that in dry-land agriculture conditions, organic farming is the answer to keeping a farmer debt free, happy and prosperous. Channappagoudar's son Thutanagouda T Patil is now carrying on the traditions of organic farming put in place by his father.

(Source: Communication and Tele-interview with OIP)

H C ASHOK SHETTY

Malathesha Organic Farm & Nursery, Post Rattihalli, Malagi Road, Hirekur Taluka, Dharwad District, Karnataka -581 106. Cell: 09449708110/ 090086469844

Ashok Shetty adopted organic farming because of severe financial difficulties. He gives credit to D D Bharamagoudra, Narayana Reddy and the Adike Patrike magazine in encouraging and motivating him to adopt organic farming. The once perennial Kumadvati River which flows adjacent to Shetty's land now has water only during the rainy season. The average rainfall for the past 10 years has been around 600mm only. A pump-set has been installed on the riverbank but this is useless when there is no water. Therefore, a bore-well was also dug to irrigate the farm.

Banana Cultivation:

By using only manure made of plant wastes, animal dung and urine, Shetty succeeded in getting high yields from his banana cultivation. Transplanting banana suckers on Amavasya (new moon day) helps the plant to gain resistance to disease. Maintaining a distance of six feet between each plant and five feet breadth between each row, he provides a mixture of one basket of FYM, half a basket of raw dung, three handfuls of ash, a handful of salt and half a kilogram of neem cake to each plant.

Before transplantation, he grows Niger and during its flowering cuts it into pieces, spreading it over the soil. This helps the banana plant get nitrogen. For five months after transplanting the banana, he sprays a 1 : 10 ratio dilution of cow's urine and water, once each week. Once every month he applies a cow-dung and urine extract (a composition of five kilograms cow-dung with one litre of cow's urine plus water) to keep the plant healthy and free from disease.

To manage nematodes he plants marigolds along with the banana (two marigold plants for each banana plant). Though the harvest is delayed by doing this, he finds the yield is greater. In this way, from 35-40 kg of banana, he is able to get 130-150 banana fruits.

Coconut cultivation

For the last 18 years he has been organically growing coconuts. The water scarcity forced him to experiment and observe the results of watering the trees at different intervals. With this experience he has adopted a pattern of watering his coconut trees only once every 30-35 days. He says that, with this frequency of watering, he is able to get results as good as that obtained by other farmers who water their coconut trees every 12 days. When he was farming with chemicals he used to water his trees every eight days.

Since 1988 he has neither ploughed the land nor provided the crop with any kind of synthetic fertilisers. Whatever wastes he gets from the coconut trees he puts back into the soil on his farm. Because of this, the weeds have reduced and the structure of the soil has improved. The coconuts he gets from his farm have a thicker kernel. Consumers also say that the coconuts are tastier and rich in oil content. Therefore he manages to get a slightly higher price for them.

What is the reason for his success, despite the reduced water input?

A pulse/dicotyledonous plant (the name of which he is not aware) is allowed to grow and spread out on the land. The roots of the plant have nodules which are nitrogen fixing. The plant also has a lot of leaves which it profusely sheds off (if anyone walks barefoot across the land the soil feels spongy). This helps the soil to absorb and retain water. The increasing number of earthworms in the soil is an indicator of the soil's good health.

Shetty also cultivates downy Jasmine. For this crop, he applies BD 500, amrut pani, amrut sanjeevini, milk spray and cow urine spray to get better yields.

He has managed to control pests through the spraying of garlic-chilly extracts, cow's urine and neem oil combinations, the extract of calotropis, and other such preparations.

He is experimenting with the use of panchagavya and also making sufficient quantities of vermicompost and vermiwash for use on his land.

He concludes that it is extremely beneficial for farmers to share their knowledge and experiences among themselves. Visiting the farms of other organic farmers and keeping in communication with them is essential for any farmer who wishes to adopt organic farming methods.

(Source: Communication with OIP)

ISHWARAGOWDRU L. PATIL

Surashettikoppa,Via Tadas, Kalaghati Taluka, Dharwad District - 581212, Karnataka. Cell: 09901171491/09448112974

Around 26 km from Hubli in Kalaghati taluka of Dharwad district is Ishwaragowdru's 23 acres farm. Born in a farming family he has been directly involved in farming since 1975. Organic farming has been practised on the farm since 1965 as the family did not believe in the use of chemicals in agriculture. Neither chemical fertilizers nor pesticides are used on the farm. Paddy, jowar, cotton, chili, thor, black-gram, green-gram, beans, soya beans, vegetable and fruits are grown here.

Ishwaragowdru says that it is not difficult to practice organic farming. He keeps some cattle for organic manure and also uses tank silt to enrich the soil on his land. Apparently all the farmers in that area had been practising organic farming prior to 1965. However that year CSH-1, CSH-2 and CSH-5 jowar seeds, that required chemicals, entered the agricultural fields. The farmers realized much later that the fertility of the soil was decreasing year after year because of the use of chemical fertilizers and pesticides.

On his farm insect pests are controlled by spraying cow urine and other solutions prepared by mixing tobacco and neem extracts and mixtures of leaves nine other plants.

The surplus paddy, gram and chillies is sold in the markets of Hubli and Kalaghati as well as in Ranebennur and Haveri markets.

Compost manure is not available in the quantity it is required and this is one of the problems of farming organically in this area. On the other hand, because of drought conditions, it is difficult to maintain more animals on the farm for this purpose. Despite this, because of the savings in costs that is possible by non purchase of chemicals, organic farming is economically feasible. Hence farmers in this region are slowly switching over to organic farming.

Ishwaragowdru feels that organic farming is a safer and more suitable alternative as compared to chemical farming. Apart from the economic benefits, the ecological and agricultural benefits in terms of improved soil fertility, the improved environment and the wholesome produce that results, are sufficient reasons to farm organically.

(Source: Communication with OIP)

K.B. VIJAYARANGA

'Shreeshaila' Karimane Village, Post Kalkere, Koppa Taluka, Chikkamagalur District—577 123, Karnataka. Phone: 08265-251460

Vijayaranga is an organic farmer whose main crop, coffee is grown in the forest. His experience with organic farming for small sized family farms that depend entirely on farming as the only source of income has not been very encouraging. He is convinced that it is a difficult proposition for small farmers and presently grows only vanilla organically.

(Source: Teleinterview with OIP)

H MURALIDHAR RAO

Harandoor village, Hadlu kodige Mane, Post Koppa, Chikkamagalur District – 577 126, Karnataka. Phone: 08265-221385

Rao has been growing coffee organically on five acres of land for the past 20 years, and gets a yield of 75 to 90 bags each year depending on microclimatic and weather conditions. He uses mainly green leaves as manure and claims coffee can be grown organically with very simple and minimal inputs. His only dissatisfaction being that he has not been able to market it as organic. People approach him for coffee during the growing season, but do not follow it up with purchase after harvests, so he is forced to sell it to local traders. Small quantities for home consumption are picked up by locals who appreciate his special brand of coffee.

(Source: Telecommunication with OIP)

JANAPADA SEVA TRUST

Melkote 571 431, Pandavapura,District Mandya, Karnataka. Ph: 0826-298754, Email:janapada@yahoo.com, web:www.janapada.org

Contact Person: Santosh Koulagi.

Janapada Seva Trust (JST) a voluntary organization inspired by the Gandhian ideal of Sarvodaya was established in 1960. The Trust has been carrying on its activities in and around Melkote.

Its philosophy focuses on experimenting with and experiencing non-violent options.

On 25 acres of dry-land many experiments in organic agriculture are undertaken. An effort to collect traditional varieties of seeds selected and cultivated by the farmers in the area is on.

JST has a publishing wing which has published books in Kannada on organic farming, including a Kannada translation of Fukuoka's 'One Straw Revolution'.

(Source: Communication with OIP)

INSTITUTE FOR CULTURAL RESEARCH AND ACTION (ICRA)

Samskruthi, 22, Michael Palya, New Thippasandra Post, Bangalore –560075, Karnataka. Ph: 080-25283370, E-mail: icra@bgl.vsnl.net.in

(Contact: P. Babu)

The Institute for Cultural Research and Action (ICRA) is working with 3000 marginal and small farmers in semi arid tracts of central and southern Karnataka. ICRA encourages and supports ecologically sound and financially stable agri-diversity based sustainable organic agriculture practices. These efforts are augmented by indigenous genetic and other resources, especially seeds and traditional skills. Based on both ecological and economic implications, ICRA focuses on 'select' crops like pigeon pea, cotton, and groundnut, paddy and small scale vegetable production.

ICRA through its multifarious activities seeks to defend the rights of small farmers to knowledge systems, natural resources and indigenous seeds. It supports the movement towards self–reliant and regenerative production system and is committed to the fight against corporate globalisation and stands for a GM free world.

ICRA is involved in:

1. Promoting agri-biodiversity based organic farming practices.
2. Organising periodic workshops, training programme on promising alternative agriculture practices like quarter acre farming, bio-dynamic farming, permaculture, homeopathy and agriculture
3. Initiating action research on socially relevant themes like ecological economics of mixed farming system, suicide of farmers, agriculture labour, seed sovereignty, food security.
4. Public sensitization campaigns.
5. Publication of Kannada bio-monthly 'Sahaja Saguvali' on sustainable organic agriculture with explicit focus and rainfed area organic farmers' knowledge and experiences and against machinations of MNCs.
6. Facilitating organic farmer – consumer linkages. ECONET, the first organic outlet in South India was initiated by ICRA.

ICRA has started the Other Karnataka Book Store, has extensive publications in Kannada related to agriculture and sustainability. Books like The Agricultural Testament, writings of Prof. Dabholkar, Bernard of Auroville, Peter Proctor and personal histories and experiences of pioneering organic farmers from Karnataka are its prized publications.

The organization has played a major role in founding the Organic Farming Association of India. P. Babu is a member of the National Steering Committee of OIP. OFAI Karnataka state secretariat is hosted by ICRA.

(Source: Communication with OIP)

AGRICULTURE, MAN AND ECOLOGY

AME Foundation, PO Box 7836, 1583, 17th Main, II Phase, J.P. Nagar, Bangalore – 560 078, Karnataka. Ph: 6596780 / 6582835; Fax: 6583471, Email: amebang@giasbg01.vsnl.net.in, Website: www.amefound.org

(Contact person: T.M. Radha)

AME Foundation is a development-oriented, non-government organization, committed to improving the livelihoods of resource-poor farm families, in dry land areas, through the promotion of ecological agriculture. Towards this objective, AME functions as an organization focusing on human resource development, building institutional collaboration and sharing information and experiences.

AME started as a project in 1986 and was located in Pondicherry, Tamil Nadu. Till 1990 it was involved in building awareness on organic farming. Between 1990 and 1996 it moved towards hands-on training for farmers in participatory technology development. In 1994, the AME was shifted to Bangalore with a special focus on dryland agriculture in the Deccan Plateau. AME has been promoting knowledge generation and its enrichment, particularly related to ecological farming and LEISA (Low External Input Sustainable Agriculture) technologies through participatory capacity building processes and experience sharing. It also facilitates knowledge generation from farm practitioners by encouraging farm level innovations through the processes of Participatory Technology Development (PTD) and Farmers Field Schools (FFS).

Besides conducting need-based, structured, long as well as short season duration training programmes, AME also conducts seminars and field days for exchanging and enriching people's understanding of sustainable agriculture. It publishes crop specific manuals, guidelines, working papers and case studies. LEISA India, a quarterly magazine brought out by AME, is a meaningful platform for sharing eco-farming alternatives and reaches a large number of people interested in sustainable agriculture.

(Source: Communication with OIP)

THARANATH

Bilumandi House, Begunvalli Post, Thirthalli – 577 226, Karnataka. Ph: 08181-84095

Tharanath farms on 10.70 acres of land which is his ancestral property. On 3.50 acres he cultivates paddy. Sometimes he grows sesamum or some other grains. On two acres of land, arecanut and pepper are mainly grown, with a scattering of vanilla. On 3.50 acres of land, he has rubber. An interesting element is that he has left about 1.70 acres of land for herbal conservation and growth of a natural forest.

Tharanath says that his father traditionally was an organic farmer. But after Tharanath started farming in 1985 he thought to use chemical fertiliser which was associated with modern farming. In 1988 he attended a public function organised by Udyana Kala Sangha, where he learnt from Narayan Reddy that using chemicals for agriculture was harmful. After that he visited Auroville, Pondicherry, Narayana Reddy's farm and Purushottam Rao's land. Then, in 1990 he started farming using organic methods.

He makes organic compost manure with cowdung, dry leaf litter and other agri-biomass. If he finds any deficiency (nitrogen) in any plants or crop he applies a herbal solution developed by him with the use of a herbal plant called Kakisoppu or Kakamari (Anamirta cocculus).

(Source: N. Balakrishnaraj/Nagaraj K.T.)

M.K. DAYANANDA

Alandoor, Shettikoppa Post, Narsimha rajapura, Chikmalagur District-577 134, Karnataka. Ph. 08266 233061/233261
Cell: 9449540677/ 9980456660

Dayananda is farming about 30-35 acres. For some years now, he has stopped using chemical fertilisers. But he uses Bordeaux mixture for fungal disease in arecanut trees and also rock phosphate (Mussuripas) in negligible doses. He is not happy using the above mentioned chemical mixtures. If alternatives are provided or invented, he is ready to give them up. He is also in search of these.

His farm is in the hilly area of the Western Ghats which receives heavy rainfall. 20 acres are with Arabica and Robusta coffee, pepper, lemon, antwala, jackfruit, mango (wild species), rare and other forest species. In 9 acres he grows arecanut, pepper, banana, lavang (cloves), elakki (cardamon), cinnamon, vanilla and betel leaf. On 22 acres he grows paddy. He has 8 acres of grazing land which was completely without tree species. In the last 20 years plenty of mixed varieties of trees have come up, by protecting fodder growth for animals.

He has dairying with a few exotic breeds. He adopted the smokeless chulla (ASTRA model), bio-gas plants of the Janata and Deenabandu models and a drier. All these contribute in saving fuelwood. Another interesting factor is that water flows naturally through his land and at the top passes through a big tank. This tank helped him to adopt the sprinkler method for about 14 acres under the gravitational power system. The drier was constructed on 21.11.1987 and it was the second construction in Karnataka by KSEST.

Dayananda is from the Gowda community married to a Jammu and Kashmiri girl named Manjula. He has two children. He is also the President of the Village Forest Committee in his village. He has the habit of collecting exotic species on his travels outside his village. It is worth visiting his farm.

(Source: N. Balakrishnaraj/Nagaraj K.T.)

SHANKER S. ACHAR

Belavadi Estate, Kalkeri Post, Koppa – 577 123, Chikmagalur District, Karnataka. Ph: 08265-35633

Shanker S. Achar is a middle-aged, interesting farmer. He has 20 acres of coffee plantation (Robusta) with pepper, orange and coconut as mixed crops. Silver oak is also grown for shade. In 4 acres he grows arecanut along with pepper and Jaikai (nutmeg). Since 1992 he is not using chemical fertilisers, but uses Bordeaux mixture for arecanut fungal disease. He says that sometimes milebex disease attacks and naturally disappears during the rainy season. He first came to know about the ill-effects of chemical use through Pradeep Thapas and Purushottam Rao of Krishi Prayog Parivar. When he realised the truth he stopped the use of chemicals. He has good yield for the past three years with an average of 650 bags per year as compared with the average yield per acre on other farms in the area being about 13 to 15 bags per year.

(Source: N. Balakrishnaraj/ Nagaraj K.T.)

U. M. RAMESH RAO & S. DINKAR RAO

Yellikodige Estate, Aldur Post - 577 111, Chikmagalur District, Karnataka. Ph: 08262-250058 Fax: 08262-250528

(Contact Person: K.R. Sethna, U M Rao Cell:09448459411)

Yellikodige Estate is a beautiful coffee estate alongside the road from Chikmangalur towards Mudigere. It covers 156 acres of land which goes up to the mountain heights and down to the valleys below. About 109 acres are plantations of coffee of the Arabica variety i.e. SLN 288 (80%), Catimore and Cauvery. The estate was started during the British period, under the ownership of Mr. Godfrey and later under Mr. Middleton. About 30 years ago it was sold to Mr. K.R. Sethna, who subsequently transferred the ownership to the present owners. Twelve years ago, Sethna gave up chemical fertilisers and started organic farming methods of plantation management which are still being continued.

Various methods of organic agriculture were adopted in the estate. Sheep manure, poultry manure, neem cake and fish manure are used proportionately according to the need of a plant. Dried leaf litter and green leaves are used to the maximum to protect the moisture of the land. There are about 40 permanent workers and about 30 seasonal workers required on the estate. Coffee pulp is also used to prepare composts within the estate and this is applied mainly to weak plantation blocks.

The yield is very good and has been steadily increasing from 42 tonnes in 1994 to 81 tonnes in 2001. The production has gradually improved after giving up chemical applications.

(Source: Communication with OIP)

A. JAGDEESH KARIMANE

Post Kalkere, Koppa – 577 123, Chikmagalur District, Karnataka.

Karimane Jagdeesh and his family own 42.75 acres of land in Karimane village. On 30 acres, he has planted coffee of the Robusta species. In between, pepper, coconut and cardamom are planted. On 4 acres, he grows paddy once a year. The yield is good. The yield in coffee also is very high.

Prior to 1990 he used chemical fertilisers and pesticides. He was made aware of the ill effects of chemical use in 1988, through an article published in Sudha – a Kannada weekly magazine – on the farming system of a natural farmer in Japan named Fukuoka. He realised that farmers are spoiling the fertility of the soil by using chemicals. Later he learnt of the principles and techniques of organic methods through Pradeep Tapas and Krishi Prayog Parivar.

From 1988-89 onwards upto 1990 he did some experiments on controlling pests but did not fully succeed. In 1990 he completely gave up chemical use. After giving up chemicals there is no problem. One year pests attacked the corner of a paddy field. He did not apply anything. Thereafter there was no pest attack. Earlier he used soil from forest leaves, leaf litter, cowdung and gobar gas slurry. But an environmentalist of his village pointed out that using soil from forests for the field is against nature. Therefore, he gave this up and now uses poultry manure, sheep manure, fish manure and neem cake.

He has 2 acre plots exclusively of coconuts, another 2 acres of palm oil and another 2 acres of pepper only. He has 2 acres of natural forest area where he doesn't want to intervene or disturb nature. He says that he wants to show how a farmer can protect forests. One interesting feature of his field is that he has contour trenching to check soil erosion.

(Source: N. Balakrishnaraj/Nagaraj K.T.)

ANANDA RAMA

Malligenahalli, Shimoga Post & District, Karnataka.

(Contact: Nagaraj K.T., Ganesh Bhat Upponi and Alandoor Dayananda)

For the past few years, an experiment on the concept of ideal farming is on in Malligenahalli. The institution named 'Ananda Rama' has about 29.5 acres altogether. This land has been developed with zeal and mission through a collective effort by 'Ananda Rama' organisation. It is worth a visit to see the natural regeneration of forests.

(Source: N. Balakrishnaraj)

SHIVARAJ PATIL

Manni Post & Taluka, Raichur District, Karnataka

Shivaraj Patil is a progressive organic farmer in a dryland area. He has about 20 acres of dryland where he has grown mango as the main horticultural crop under drip irrigation. Initially the land was completely rocky and barren. Now there are innumerable species of plants. He was once an advocate but gave up law and took to agriculture as a profession on property which he inherited. His son also did M. Sc in Agriculture Science. Both of them have an ambition to plant and protect all the species of the world which can survive in their land. He has extended organic farming practices to his paddy field. His land is worth a visit during September-October.

(Source: N. Balakrishnaraj)

SARASWATHI AMMA AND MAHABALESHWARA BHAT

N. Subramanya Bhat, Yermaje House, Kukkedi Post,
Belthangady Taluk, D.K. District.

The farm was earlier a joint property and traditionally they were not using chemical fertilisers and pesticides. In the 1980s chemicals were used on the land. For the last 25 years no chemicals have been used. Instead they use poultry manure, sheep manure, compost along with cowdung, dry leaf litter and green manure. Their farm is surrounded by natural forests where they have access rights to fuelwood, green manure and other non-timber forest produce. Everywhere on their land the work of earthworms can be seen, which makes the land soft like bread.

Saraswathi Amma cultivates an 1/2 acre plot with arecanut and banana trees and 3 acres naturally forested area with pepper, jackfruit, cashew, oranges tamarind.

(Source:Communication with OIP)

B. BASAVARAJU

Santeshwara 573 131, Hassan Dist., Karnataka. Ph.: 08167-239260 Cell: 09611731967

In 1974 when I graduated in Science, I decided to take up agriculture as means of livelihood. My elder brother was of immediate help to me. It was he who inspired and motivated me to take up agriculture, instead of hunting for a government job. Today, I am self-sufficient and leading a happy life.

Although I had keen interest in agriculture and always curious to know more about various farm-practices, my brother, who had good knowledge of both traditional and modern-scientific farming, turned out be my friend, philosopher and guide. He had understood the dynamic relationship between soil, seeds, fertilisers, water, weather, ploughing techniques, solutions to pest attacks, crop diseases and most related aspects of farming. I was deeply involved in his experiments using modern implements and water management techniques, which resulted in improving farm productivity.

By 1983, I had acquired reasonably sufficient knowledge about agriculture. Impressed with my knowledge, my brother strongly felt that I could be a successful farmer if I continued with agriculture. The 6 acres of land which he handed over to me to develop independently then, turned out to be my 'karma bhoomi' and thereby, opened a new chapter in my life.

Initially, I started with traditional annual crops like ragi, paddy, avare, alsande, oilseeds and chilies and increased their productivity. My experiments helped me further improve productivity and annual yields to the extent of creating a record by harvesting yield of 54.2 quintals of ragi in one hectare of land. Subsequently, I was attracted to horticulture and the new practices in organic farming and developed a portion of land and started raising various crops. Today, there are coconut, arecanut, banana, coffee, beetle leaves, castor, ginger, and fruits. I am also raising vegetables for personal consumption. Several other plants and trees such as sandal wood and drumstick have been raised around the boundary of this 6-acre farm.

All these crops are high-yielding and of good quality and disease-free. I have developed a few natural solutions to keep crops free from disease. For example: pepper affected with yellow leaf spot disease, betel affected with black leaf spot and areca-nut affected by small leaf occurrence are treated with Kasaya. This is a solution prepared from various combinations of the urine and dung of various domestic and semi domestic animals and weeds, neem, pongamia seeds, honge, lantana, thungade, vishampuri, fruits of banyan, hatti, goni, peepul mixed with water.

Basavaraju conducts organic farming training on his farm

I have used natural methods to ward of pest attacks. The fruit trees are now home to several bird species. I have tamed 8 owls that live freely on the farm and play a major role in controlling rodent population and also guard the farm against intruders by night by screeching in unison.

The farm has rainwater harvesting and drip-irrigation systems to ensure water economy and management.

Today, I am self-sufficient and self-reliant having a good farm and a happy family.

B Basavaraju's work has been recognised with:

- National level recognition for 'organic farming' in 1996
- Best Farmer award in 2000
- NIF Award in 2001
- Honoured with 'Best Farmer' award by University of Agricultural Sciences, Bangalore in 2002
- 'Karnatakada Shreshta Udyami' and 'Parivarthak' award by Z-Kannada TV in 2007
- State-level G.Made Gowda Pratisthan award in 2008

(Source: Communication with OIP)

SHEKAR G.R.

Gulahallipura, Bettahallimatha P.O., Kunigal Taluka, Tumkur District, Karnataka.

On a five acre plot of land, in a drought prone area, Shakar cultivates crops using organic farming practices only. He says that at one time, for about 2 or 3 years, he did some chemical farming, but was not satisfied with the results and returned immediately to organic farming.

He depends entirely on the rains for cultivation on this land and has selected varieties of crops which are suitable to drought conditions. He grows mainly paddy, ragi and lentils. Farming is possible from June to December only. Half an acre of land has been reserved for cattle grazing.

Once every three years he collects about 300 cartloads of silt from a large public tank next to his farm, and together with cattle manure he spreads this over the fields. This is the only nutrition he is able to provide to the land. This practice has been followed by his forefathers as well. No one else wants the silt, so he uses it freely.

He also has another plot of half an acre which is irrigated with water that he borrows from his brother's tube well and there he grows areca nut, banana, ginger, turmeric and vegetables.

Most of what is grown on his farm is for family consumption. The excess is sold. He is very contented in this profession which brings him peace and satisfaction.

(Source: Communication with OIP)

HARISH ACHARYA

37/1, Acharya Farm, Kadokola, Mysore 571 311,Karnataka.
Ph: 0821 -2596334 Cell: 09886420907

Harish Acharya farms on 4.25 acres of land that he owns and another 6 acres that he looks after. His main crop is coconut-600 palms and areca-650 trees. Intermixed, he grows turmeric on one acre, 500 banana and vegetables. The beetle-leaves that he was previously growing had to be taken off the farm because of intense snail infestation. He now has added avocado, orange and sweet lime trees to the farm. There are three cattle heads on the farm. Milk is processed into butter and ghee for sale.

Harish holds a diploma in electronics but decided to become a full time farmer instead. For the past seven years he has been involved in organic farming. He follows all the well known organic farming practices including intercropping, mulching, vermi-composting, the use of panchagavya, etc. Since the last eight years he has been getting some profits from the farm.

The coconut yield is 35,000 nuts per annum and areca trees yield about 20 quintals annually. A part of the coconut crop is sold directly to the market and some is processed as copra, sweetmeats, etc. Most of the produce is sold through Nesara, a store dedicated to the exclusive sale of organic produce in Mysore.

(Source: Teleinterview with OIP)

RAMESH S. KIKKERI

163, 17th Main, 4th Cross, J.P.Nagar, E Block, II Stage, Mysore 570 008, Karnataka.

On just over an acre of land Ramesh grows a variety of trees and plants including coconut, areca nut, pepper, banana and vegetables. The coconut is processed into oil for sale. Banana and areca nut, which are on the verge of yield, will also be sold. The other crops are for personal consumption. Ramesh is technically trained but about eight years ago decided to start farming instead. He began in 1994 by buying a farm plot instead of buying a flat.

Initially on the advice of the horticulture department he used fertilizers but was fortunate to come in contact with some organic farmers and after visiting their farms he switched over to organic farming. He has stayed with this practice ever since. Besides finding organic farming eco-friendly, he saw that it also reduces the need for external inputs and makes the farmer self sufficient.

He practices in-situ manuring of the crops. There are several hundred micro-pits dug around the trees into which he plants a host plant like gliricidia from which he can get green cuttings which are then deposited into the same pit. He has also planted a variety of trees like meliadubia, neem, subabul, silver oak etc. as a sunscreen on the western side and uses their leaves too as green manure for his crops. He has a few cattle and adds their dung to the green manure in the pits.

These micro pits are his rainwater harvesting system. The open pit-wells are charged with water and so the plants get moisture. There is a dense canopy all over the farm and there is very good ground cover too so there is no loss of water. All this is sufficient to ensure that the crop is good.

He does nothing much about pests attacks. Even if there are green caterpillars which eat some plants he feels they contribute to the farm with their manure. If the pest problem persists he just stops growing that crop for sometime and switches to something else. That takes care of the problem quite effectively.

Ramesh doesn't have much outside help and hence has to keep the farm work to the minimum. But that he feels is as nature intended it to be. We should not have to work too hard transporting things from one side to another, driving away pests etc. Nature will take care of these things on her own.

(Source: Communication with OIP)

SUMANGALA VEERABHADRAPPA

Vasundara Farm, B.G. Kere-577 529, Chitradurga District, Karnatka.

Sumangala is an enterprising farmer who together with her family and a large labour force of around 30 persons has been farming since 1967. The quest for water has been a primary concern and presently the farm has six working bore-wells after making seventy attempts to strike a good water sources. The farm also gets water from a lake 4 to 5 kms away by private pipeline. All this has meant a lot of effort. But she proudly claims, there is no farm as green as hers for a hundred miles around.

A wide variety of crops are cultivated on the farm. Coconut and tamarind are both grown on a large scale. The orchard consists of bananas, chickoo, papaya and other fruits. Besides this, they are also involved in sericulture and mulberry cultivation. Fodder crops and grasses, to feed the 30 odd head of dairy cattle are also grown. To top it all, bee-keeping helps increase cross-pollination on the farm.

Sumangala sells coconuts directly or as copra to people. The cocoons from sericulture also fetch good money, as do sale of tamarind and fruit from the orchard. The farm also markets saplings of various flowering trees and manufactures 'neera' – derived from coconut trees which is of medicinal value. She has regular customers and doesn't depend on the open market for selling the farm produce. The farm is fully cultivated and there is no scope to introduce anything new.

She doesn't see pests as a serious problem and feels that any pest problem can be dealt with using traditional methods. She does a lot of vermicomposting and mulching and uses panchagavya. The farm is fully organic, except for mulberry cultivation where they still use some chemical fertilizer. But they do not use pesticides at all and they never use either chemical fertilizers or pesticides for food crops. She takes care to plant trees that will prevent soil erosion, give leaf-cover and attract birds and bees, all around the farm.

Sumangala is presently involved with a women's group which processes food, makes jams and other dried food products for self-reliance. A progressive farmer, involved in the women farmers' movement, she has been honoured by several organizations in the past. Sumangala has received various awards from the Government of Karnataka for her innovative methods in sericulture. She has received the prestigious 'Seth Balder' award for her dissertation on sericulture. Every year many students receive training under her care and are guided in silkworm rearing. A savvy woman farmer indeed, way ahead of her times.

(Source: Communication with OIP)

RASHMI SAMAK

806, 5th Cross, IV Block, Koramangala, Bangalore-560 034 .
Phone: 080-25506010

Rashmi worked in computer software and earned enough to buy a plot of land of four acres, in order to do what she wanted: grow healthy food for herself and her family. Later she bought another four acres and now owns an eight acre farmland, in a rain-fed area, on which they grow rice, a variety of lentils, mustard, chillies, groundnut and vegetables. What is not consumed is sold. Many families are interested in organic produce and she has some regular customers who readily buy her weekly hampers of mixed vegetables.

Not all the land is cultivated, as part of it is hilly and rocky. They did the terracing themselves but for daily farm work, they have employed two workers. They prepare vermi-compost and have tried out panchagavya for the first time this year. Pest problems come and go and if the pest problem is small they just let it be. Initially farmers in the area laughed when they found that she wasn't willing to use chemical fertilizers or pesticides and they said she wouldn't survive at all. But now they think again and ask questions about how things are done, the organic way.

(Source: Communication with OIP)

MAMATA D. & ANAND A.S.

Chitrakoota, No. 14, II Block, I Stage, I Cross, Vinobha Nagar, Shimoga City 577 204 Karnataka. Ph: 08182-248037

Mamata and Anand's farm is in Sagat Taluka of Shimoga District. On their eight acres, rain-fed land, they have 250 amala, 50 jamun and 20 Terminalia chebula trees, ginger, turmeric, green gram and some vegetables. Recently they have planted mango, chickoo and kokum. On the borders they have 200 different jackfruit varieties. Amala is their main crop. A married couple, who work on the farm and visit every two or three days, are their permanent employees.

Once the monsoons are over, water from an open well is used. They don't want to use tube wells, as they believe, it is not good practice. Every effort is made to harvest rainwater fully in their fields, through bunds, trenches and by allowing termite mounds on their land, which absorb enormous quantities of water.

All the amala is ayurvedically processed into chavanprakash and amala wine. This value added product is sold directly to the consumer. The processing of amala is done strictly as per the classical texts and no chemical preservatives are used. ISKON farm in Bangalore purchases substantial quantities of their products.

They give free training to farmers who grow amala, with the intention of promoting indigenous varieties of amala. Their chavanprakash has been tested with other varieties and they say that it has more vitamin C as compared with the others. They attribute this to the care they take while processing.

No chemicals have been used since they purchased the farm eight years ago. They use composting, mulching and the spraying of cow's urine as techniques of organic farming. They use solar power as their energy source and not electricity. For lifting water from the wells they use the animal/manually operated mechanical pump.

Anand is a key member of Krishi Prayog Parivar, an NGO spreading the message of organic farming in Karnataka.

(Source: Communication with OIP)

SAHAJA SAMRUDHA

'Nandana', No. 7, 2nd cross, 7th Main, Sulthanpalya, Bangalore 560 032. Ph: 080-22715744 Cell: 9880862058, email: sahajasamrudha@gmail.com, website: sahajasamrudha.org

Contact: Krishna Prasad G.

Sahaja Samrudha (SS) has been recently registered as a trust, however it has been active in networking with organic farmers and groups working with farmers since 2000. The aim was to bring organic farmers together. SS has around 200 members of which about 40 are active. Every two months the group meets and shares experiences in organic farming. They also organize workshops to help farmers acquaint themselves with new techniques. So far they have organized workshops on biodynamic agriculture, botanical pest management, crop improvement, tube well recharge and nutrient management. SS also organizes exposure visits.

Its activities have spread to conservation of biodiversity, standardization of sustainable farming techniques, conservation of the indigenous cattle breed, 'Hallikar' of Karnataka. Spreading legume cultivation knowledge, helping farmers find markets for their produce, etc.

Many farmers are doing innovative work on their farms, but this is not widely known because they rarely document their knowledge and experiences. Providing technical inputs, encouraging experimentation and helping to document their findings helps farmers become 'peoples' scientists' facilitating wider dissemination of information on innovations. Based on this premise, SS has carried out extensive documentation of farm practices.

The result of this interaction among farmers and providing them access to information is that the farmers have be-

Sahaja Samrudha training on coconut mite control come more innovative and creative. One of their members, Lingamadaiah, developed a paddy variety 'Mysore Mallige' for which he got the 1st Prize in the National Innovation Crop Improvement section. Three members were awarded Srishti Sanman: Krishna Prasad for initiating the organization, Ayyappa Masage for rainwater recharge of tube wells and Anusuya Sharma for terrace gardening.

The organization collaborates with government departments to spread the message of organic farming. It even has some scientists from the Agricultural Department as its members and they are very active in promoting organic farming.

SS has undertaken an organic group certification programme with internal control system certified by IMO, a Swiss agency.

SS believes that organically grown food should not be an elitist diet only but must become food for all. It should be affordable for the average citizen while providing better returns for the farmer.

Publications:

10 Steps Towards Organic Farming available in English and Kannada.
'SRI' Madagaskar way of rice cultivation.
'Shatasrungada Salinalli….' Collection of articles on organic farming.
Velvet beans – Magic Plant
Tadrupi kadu – Introduction to analog forestry
Savyava drudikarana – Organic certification manual
Seeds of Change – News Letter
(Source: Communication with OIP)

N. MRUTUNGA

Coordinator, Siri Samruddi Balaga, C. Nandihalli Post Office, Gubbi Taluk 572 117, Tumkur District. Cell: 09448970967

Mrutunga has a 15 acre farm on which he does mixed farming, with multi-storey cropping. He grows coconut, areca nut, banana, cocoa, pepper and cardamom. He also grows field crops such as paddy, ragi and groundnut. Recently he started cultivating vanilla on a small scale. His farm has been totally organic for the past 10 years but even earlier he had not used chemicals in a big way.

The farm has 3 bore wells and plenty of water but Mrutunga has still gone in for micro sprinkler irrigation, in order to save water.

All agricultural waste is recycled and is used as mulch to cover the entire farm. Of special significance and interest is his use of a weed named 'Gauri' for mulching, thereby converting a problem into an ally. The weed forms a thick mat over the entire area and thus conserves soil and water. Now farmers from other farms come and take the weed from his farm, to use in their farms! For his innovation in using this weed as an organic farming technique, his name has been recommended to the National Innovative Foundation for an award.

Mrutunga is the coordinator of Siri Samruddi Balaga (SSB) for Tumkur District. SSB emphasizes sustainable agriculture. It has over 300 members who meet every month, in any one of the members' farms, to discuss matters of common interest. The highlight of each meeting is the introduction of any new botanical plant pesticide that any of the members have discovered or the sharing of any innovative ideas. The association also invites resource persons to give them information on topics such as rain water harvesting, bore-well recharging and soil and water conservation activities. Once every 6 months they conduct study tours.

SSB has already conducted 87 meetings so far (Sept. 2008) in all the talukas of Tumkur District. Sometimes even MPs, MLAs and district authorities participate in their meetings, even though they are not specially invited. Siri Samruddi Balaga has meticulously documented all its activities and insights gathered from their farmer meetings and are available for anyone to wishes to visit them.

(Source: Teleinterview with OIP)

G. VIJAYAKUMAR

Sri Balaji Farm, Alur Village, Bangalore (North) 562 123,
Bangalore District, Karnataka.
Phone: 080-23716866

In 1980, at the age of 17, Vijayakumar left the city of Bangalore and returned to his native village in Alur to start farming. Ever since his childhood, he had been interested in nature. Despite resistance from his parents he had reared wild birds and other small animals such as rabbits in his home.

Having opted to go in for agriculture, to start with, for three or four years, on the advice of local villagers, he practised traditional farming. Then scientists and staff from the Department of Agriculture converted him to chemical farming. The yield was higher and the growth of the plants was good immediately after the change. Gradually however, the yields began to decrease, pests and diseases became visible and expenses began to rise.

One day one of his labourers who had not taken adequate precaution while spraying pesticide, inhaled some of it and became so seriously ill that he was on the verge of death; somehow after rushing him to hospital his life was saved. This had a lasting impact on Vijaykumar who realized that chemical farming was not good.

Around this time NGOs like ICRA and the Green Foundation were giving training programmes on organic farming and to his surprise the same agricultural scientists who had once taught him chemical farming seemed to have been converted and now offered advice on organic farming! So after 8-10 years of doing chemical farming he turned full circle back to organic farming. Now he is often called to train others as well.

On his 25 acre farm Vijaykumar grows cereals, pulses, vegetables, fruits, nuts, oilseeds and medicinal and aromatic herbs. He practises integrated farming. Believing that, as a farmer, he should know everything, he has through self-acquired knowledge, done everything from rearing sheep, keeping poultry and managing a dairy, to fisheries, seri-culture, apiculture, rabbit farming and piggery.

His main interest is the conservation of seeds. He conserves about 18 indigenous varieties of paddy seeds, 6-8 varieties of ragi, four varieties of brinjal, 12 varieties of chillies, three varieties of horse-gram and three varieties of castor. For growing vegetables he uses only local seeds. To keep the seeds from the farm safe they are stored in earthen pots, gunny bags and bamboo or straw baskets. They are sometimes treated with herbal extracts of neem, vitex, tobacco or salt. Grains are also mixed with useful leaves, or oil extracts, ash etc. for their protection.

For the nutritional management of plants which he feels is very important, he uses various composts such as vermicompost, biodynamic agri-compost, EM compost, biogas slurry, oil cakes, tank silt and poultry manure. The Japanese method of composting is also practised. He also prepares vermiwash, EM liquid and other liquid manures himself which are incorporated into the soil. Different composts are separately maintained and not clubbed together. Growth promoters like panchagavya and amrut pani are also used.

Vijaykumar believes that farming practices so far have concentrated on understanding the upper world but people do not have much knowledge of the lower world i.e. micro-organisms, earthworms, termites, microbes, etc. He is therefore focussing his efforts on learning about this fascinating aspect.

This farmer believes that by protecting predators and allowing all of them their own space, pest problems can be taken care of as they feed on each other. He uses locally available leaves from oil producing plants, which are extremely useful for such preparations, to make herbal pesticides. He also adds garlic, ginger, aloe, clyendron, custard apple leaves, calotropis, neem seed and vitex negunda. These are ground separately and then mixed in an open container. The preparation is kept for 7 days, the mixture stirred twice a day. Thereafter it is filtered and is ready for spraying or applying on any plant. Preparations from tobacco, agave and cow urine are also used.

Crop rotation is practised as well as techniques such as deep ploughing, mixed cropping, multistoried cropping and intercropping contribute to the success of his organic farming.

Now that he is a farmer, fulfilling his childhood interest in nature, he is happier following the path of his own choice and feels that he has contributed to knowledge about organic farming. Every farmer should continually experiment in order to find the most suitable way for farming his land, he says.

Vijaykumar is married with 3 children. He deliberately selected a rural woman Rathnamma (the name translates as 'earth') as his wife. Both he and his wife work on the farm. When he was doing chemical farming he needed 15-20 labourers, but now 4 labourers are sufficient. His children's names – Nisargadarshan (natural view), Shobhanisargi (natural beauty) and Vedanthsavayou (organic knowledge) – all reflect his love for nature.

(Source: Communication with OIP)

K.R.NEELAKANTA MURTHY

Odekar Farms, Nandhihalli, Kabbigere Post, Via Thavinakere
- 572 138, Tumkur District, Karnataka. Ph: 08138-239029

Neelakanta Murthy was the manager of a bank when he decided to resign in 1994 and do farming instead. His family had purchased 50 acres of land in a deserted area, of which 30 acres is cultivable land. The rest comprises some forest land and a 2 acre pond and a small stream both of which are rain fed. When they bought the farmland, the coconut and mango trees on the plot were in a pitiable condition, as the whole area was uncared for.

Since then, Neelakanta has transformed the area, covering the land alongside the stream with bamboo, sandalwood and teak and reviving the coconut and horticultural plantation. Initially, he was not completely organic, but neither was he using much chemicals. He had been applying a lot of farm manure, buying the pig/sheep manure from other places.

It was in 1996 that, as an experiment, he stopped tilling 4 acres but cultivated it nevertheless. Since he did not find any difference in the tilled land and the untilled 4 acre plot, he decided not to till the whole area. He started rearing cows and buffaloes and he now has around 10 animals.

Twenty acres of the land are under coconut plantation. Cocoa (6 acres) and vanilla (4 acres) are interspersed. In the rest of the area he cultivates pulses, vegetables, etc. There is a shortage of water on the farm, both the stream and pond being rain-fed. Therefore he has had to concentrate on water conservation methods, such as the digging of trenches and the building of bunds and percolation tanks as well as check dams for the streams. All this has helped to recharge the bore-wells.

He has planted forest plants of different species in the trenches and even though, for the past couple of years, there has been very little rain, more than 95% of the plants have survived. He planted around 3000 saplings in 2002. He has a collection of around 2000 medicinal plants, which he has not only identified but also utilizes in various preparations.

Around 30 bee boxes have been set up for practising apiculture, the honey being sold locally at Rs.150/kg. After buying cattle Neelakanta constructed a gobar gas plant and now has gas for cooking as well as slurry for vermi-composting. He does not sell any vermi-compost generated on the farm but he sells earthworms.

For green manure, he has grown more than 1000 pongamia plants and around 700 neem plants. His main sales come from coconut sold as copra, as that fetches a better price.

Utilizing the weeds that grow on his farm along with the medicinal plants, his wife Anitha manufactures herbal oils at home. She also prepares balms for general pains, which are sold locally. Around 10-15 litres of herbal oil are sold every month.

Neelakanta and Anitha also give training to self-help groups. The trainees are directed to them by Government departments or NGOs. A small fee is normally charged, but for local people and those who cannot afford it, the training is free. Anitha trains the participants on the manufacture of oils, balms, etc. and Neelakanta lectures on organic farming practices.

An M.Sc. in Agriculture, Neelakanta feels that he did not require to use the knowledge that he gained from his formal education. However, his education has enabled him to methodically analyze his observations, to identify plants and to communicate his findings.

(Source: Communication with OIP)

MONICA SHARMA

49, 2nd Stage, 5th Main, Postal Colony, Sanjayanagar, Bangalore 560 094, Karnataka. Ph: 080 – 3415664 / 8563890

Aralu Mallige Grama, Doddaballapur Taluka, Bangalore

Monica Sharma owns a 5.5 acre farm at Aralumallige Village, Doddaballapura Taluka, in Bangalore District. An M.Sc. in Applied Botany she has worked as a research associate on a biodiversity project in the UAS, Bangalore and has also worked in some reputed hybrid seed companies. She is keenly interested in cultivation and the management of the farm, although the day to day activities are presently being handled by her father. The whole family is involved as farm-hands during the time of planting and harvesting.

The farm was purchased about seven years ago and has been run on organic lines right from the start. It has a variety of horticultural crops like mango, chikoo, pomegranate, guava and commercially viable trees like teak and silver oak. Many varieties of trees are being planted in one small area in an attempt to raise a forest. The main objective is to create as much diversity as possible. On an experimental basis, vanilla, coffee and some spices and fruit trees are grown. Field crops like paddy, ragi, bajra, wheat and pulses like red, green and black grams, beans of many varieties, vegetables and greens are being cultivated, mostly for the family's own consumption. The yield being moderate, very little surplus remains for selling to consumers who are aware and request for organic food. A good number of people, including Monica's parents and the families of the workers (a total of about 20 persons), get a fair share of their food from this farm.

There is a small dairy of four cows – two indigenous and two Jerseys. The morning milk is sold to the KMF dairy cooperative and the evening milk kept for consumption. A gobar gas plant is being constructed. Botanical pest and insect repellants made on the farm and locally available manure, compost and vermicompost are being used.

Mrs. Anusuya S. Sharma, Monica's mother, apart from being involved with the farming, is also a keen organic gardener. She is well known for the variety of medicinal plants, fruits, flowers and vegetables she grows, all in pots and bags on the terrace of her home in urban Bangalore. She makes her own compost using kitchen wastes, dry leaves and cow dung. Anusuya has received the Srishti Sanman award from the National Innovation Foundation in April 2003, for her achievements in Urban Terrace Gardening.

(Source: Communication with OIP)

A. KRISHNAMURTHY

No. 29/3 B, Pipeline Road, Mahadeshwara Nagar, Vishwaneedam P.O., Bangalore 560 091. Ph: 080-3581449

On a five and half acre farm in Tumkur, purchased in 1991, Krishnamurthy grows chickoo (cricket ball variety) and Ratnagiri Alphonso mangoes for commercial sale. He also grows vegetables and grain for personal consumption. Recently he added organically grown Steevea to his farm.

Krishnamurthy purchased the farm land in 1991 but began farming around 1996. He has never used chemicals during the last eight years of farming. The water supply is reasonable but because of power shortages and irregular availability, the bore wells have to be worked at odd hours.

To improve the quality of produce from the farm he uses sheep and cattle manure, vermicomposting, mulching and panchagavya. He also prepares a variety of concoctions for the healthy growth of the plants such as: Amruta sanjivini (a mixture of lime juice, eggs and jaggery), fish-jaggery solutions or coconut-buttermilk solutions. These are practices based on traditional knowledge, which today are unfortunately forgotten but which he is hoping to revive. He sells the produce from his farm directly to customers who have been purchasing from him for a long time. There is enough demand for the produce at present.

(Source: Communication with OIP)

GOPALKRISHNA G NAYAK

Brindavan Estate, PO Ekkambi – 581358, Sirsi Taluka, Uttara Kanada District, Karnataka, Ph: 08384-489835

Gopalkrishna's farm is located 15 km from Sirsi on the Sirsi-Hubli road, in Sirsi Taluka, Uttar Karnada District. He has been farming for the past eight years on his farm of seven acres. Although he comes from a farming family, he had previously been looking after the rice-mill and grocery store belonging to the family.

The main crop on the farm is areca-nut. Cardamom and pepper are also grown. Besides this, fruits of different varieties such as bananas, mangoes, sapotas, coconut and cashew also grow on the farm. Six years ago, vanilla was also planted which has begun to yield since the past 3 years. The farm is mostly on uplands but despite this he plans to try and cultivate paddy and sugarcane in the future.

From the beginning Gopalkrishna has only been doing traditional farming avoiding any chemical usage. Cow-dung manure, green manure, biodynamic manure and compost are the main inputs for the farm. His two cows supply some of the requirement and the rest is purchased. Organic farming has not been difficult in this well forested belt. Trees on the farm itself are a good source of green manure. Pests have not been a big problem but occasionally he has used neem oil and other organic extracts as repellants.

The produce of the farm is marketed in Sirsi itself. Areca-nut, pepper, cardamom, mangoes, banana and vanilla are being sold. Vanilla is presently fetching very good returns. He feels that a separate market for organically grown foods would benefit farmers like him. Besides this, further dissemination of knowledge on what to use for specific diseases and pests would be beneficial to organic farmers.

Gopalkrishna is fully satisfied with organic farming. He feels that its benefits, such as saving of water, reduced incidence of diseases and pests and a harvest of tasty and pure foods are sufficient to motivate any farmer to opt for this form of farming.

(Source: Communication with OIP)

UDAY KUMAR V DESAI

PO Rudrapur, (near Murgod Town), Taluka Soundatti, District Belgaum – 591 119.

Uday Kumar is from a farming family and has been farming for the last 25 years. Four acres of his 25 acres farm is 100 percent organic and 21 acres 70 percent organic.

The crops that he has been growing have changed over time. Earlier he had grown green-gram and groundnut, jowar, wheat, bengal-gram, sunflower and cotton under rain-fed dryland regimes. Now following three continuous drought years, the choice of crops is sugarcane, maize, cotton, vegetables, sunflower etc., when irrigation is possible. Red banana, papaya and drumstick are grown on a 2 acre field and vegetables on one acre, all of which are organic.

Five years earlier, Uday Kumar practised intensive chemical farming. At that time his soil was fertile and soft and combined with good rains he had managed to get an extremely productive harvest. But later the soil lost its fertility and nutrients, became hard and impervious.

Due to the sound of power sprayers used in chemical farming, Uday Kumar lost his hearing to an extent of 70 percent. Reduced resistance to ill-health and skin and food allergies also manifested and he lost all interest in farming for some time. After attending an organic farming workshop conducted by ICRA, he decided to shift to organic farming.

During the first three years of conversion, chemicals were completely stopped and only farm-yard-manure was used. Following that, every week cow dung and urine, biomass and green leaves slurry were applied. Panchagavya was also used. Uday Kumar has cows, oxen and buffaloes. He says it is not difficult to practise organic farming but it is necessary to have some form of irrigation. He also feels that organic farming protects the soil, helps reduce both water use and the need for labour

To control plant damage due to insects he prepares extracts from the leaves of bitter plants that even goats do not eat. Dilutions of these are sprayed on the plants. Besides this, natural predators have now multiplied and these automatically ensure a balance.

The produce of the farm is sold in Belgaum, Hubli and Mumbai but unfortunately not as high priced organic foods. Alternative markets for organically produced goods are required for this, he says.

The switch over to organic farming has restored the health of the land over a period of three years and it is rich in nutrients and soil fauna again. Earthworm activity has improved tremendously and the soil has softened once more. In a drought scenario the farm can be tended with reduced use of water as the water retention capacity of the earth has increased. But best of all, says this farmer, each one who has tasted the produce of the land has commented that they have never tasted such sweet fruits before.

(Source: Communication with OIP)

SRINIVASA NAIDU

Mayur Photo Studio, K.R. Extension, Chintamani Taluka,
Kolar District, Karnataka – 563125. Ph: 08154-451431 (O)
/ 08154-454068 (R)

Srinvasa's farm is located in Subbarayanapete village, Ambajidurga Hobli in Chintamani taluka about 5 kms from Chintamani town along the Sidlagatta road. He has been farming for the last 20 years on his 8 acres and 26 guntas of dry land.

On this farm he grows a mixed crop of ragi, beans, mustard, red-gram, groundnut and cow-pea in rotation. In times of drought, when rain fails, till September he chooses to grow horse-gram. Surplus crop is marketed in the local markets itself.

Since the beginning, Srinivasa has been involved in traditional methods of farming and he has never resorted to chemical fertilizers, pesticides or weedicides. Since he doesn't have any livestock of his own, he purchases farm-yard-manure and uses it in combination with tank bed silt and neem-cake.

He has generally not had a serious pest problem. However, once when his groundnut crop was infected with collar rot disease, he resorted to a change in the crop pattern by cultivating horse-gram next. This helped stem the spread of the disease.

Organic farming, he says, keeps the food chain of the farm intact, maintains soil health and is sustainable. Organic farming is not difficult if one has a pair of oxen, some milch cows and minimal water supply.

(Source: Communication with OIP)

B K NAGANNA

S/O Karenagappa, Krushikasamajada Upadhyaksharu, Bevinahally – 572135, Sira Taluka, Tumkur District, Karnataka.

Naganna grows vegetables such as brinjal, tomato, chilly, watermelon and onions; food grains like ragi, paddy and jowar and commercial crops such as coconut, areca-nut, ground-nut, banana and vanilla on his farm located in Bevinahally in Tumkur district.

Born into a family of farmers he has been farming for the last 25 years. Having concluded that organic farming is less expensive, requires only natural inputs available on the farm itself, and is more remunerative, he switched over to farming organically around ten years ago.

He feels that it was relatively simple for him to practise organic farming as dung from his cattle and the leaf and other plant litter that he gathers from his farm become no-cost inputs for composting. Naganna prepares a solution of panchagavya with leaf litter, cow-dung and urine. Apart from application of this to fertilize and protect his crops he also practises crop rotation which ensures that pests do not multiply beyond control. Apart from this, he also makes plant protectors from extracts of Honge bevu, Hekke, Uduve and other mixtures.

The surplus crop is sold in the local market but constant fluctuation of and inadequate prices are always a problem. Adequate infrastructure to market the produce of organic farms, he feels, is therefore necessary.

Naganna feels that it may not be entirely easy for small farmers to switch to organic farming as they would have to look outside of their land for manure and composting resources. It took six years for him to completely convert his farm to organic farming. He experienced a drop in the yield initially and this he feels may deter small farmers who may not be able to bear up with even small losses. Instead government promotion and backing is necessary to persuade farmers to switch to organic farming and to succeed both in the realm of farming as well as marketing the organic produce.

(Source: Communication with OIP)

R G TUKKAPPANAVAR

Vartak Galli, Jamkhandi Taluka, District Bagalkot, Karnataka State – 587301. Ph: 08353-322605 Cell: 9448347413

Trained in law, Tukkappanavar has a 40 acre farm in Mareguddi village in Jamkhandi taluk of Bagalkot district. Coming from a farming family, he has been farming for twenty years but has shifted to organic farming just a year ago. He says that chemical farming is laborious and there are less margins of profit. Besides this, chemical farming makes the land barren. On his farm he grows sugarcane, bananas, coconut, sunflower, ground-nuts, maize, wheat and lemon.

This farmer does not farm all the land each year but allows portions of it to remain fallow, in rotation. He keeps a few bullocks and cows for use. Since he has been doing organic farming only for a short time he is not expecting to get good results very quickly.

It is taking time and effort to change to organic farming and he expects better yield only after three years of farming in this manner. He feels that the vagaries of nature, that is the weather, and no uniform methods or solutions to various problems of farming, makes it difficult to do organic farming. However because soil fertility is maintained and because it is less laborious and less expensive he feels it is advantageous to go in for this type of farming.

(Source: Communication with OIP)

M LINGAMADAIAH

Nisarga, PO Aralasandra Village, Channapatna Taluka, Bangalore District – 562 138, Karnataka. Ph: 080-7254560, 7264560

Lingamadaiah, hailing from a family of farmers, has been farming for the past 25 years. He has an eight hectare plot on which he grows horticultural trees such as mangoes, bananas and sapotas and agricultural crops such as paddy, ragi, horsegram, dals, etc.

Until the year 1994 he had been farming with the aid of chemicals. In that year a farmer from the Philippines gave him some grains of paddy to develop in an organic way. Eventually in addition to developing the paddy, Lingamadaiah converted the entire farm into an exclusively organic farm. He now feels that this way of farming is essential to preserve the health of the land, air and water

He uses green leaves for mulching and biomass and other farm 'waste' both for mulching as well as preparation of compost. The inputs in general are tank silt, farm yard and compost manure, green leaves etc. He has a few cows. Organic farming is not so difficult, he says, but it is not easy to convince others.

Changing over to organic farming takes about three years: during this period of conversion one has to give the farm more than normal amounts of organic inputs and the yield too drops. After this period it is possible to reduce the inputs. It is important that the inputs that are required for organic farming are generated on one's own land in a self-supporting cycle.

The large numbers of birds that flock to his farm help in keeping the population of insect pests low. To control flies and mites he uses a spray of neem-seed paste mixed with diluted cow urine.

Overall, the effect is that pest incidence is reduced and soil is vastly improved resulting in the increase of soil fauna such as earthworms and other useful life-forms. Every year the soil is getting softer and softer and the consumption of water has reduced with the increased water retaining capacity of the soil.

Mangoes sapotas, bananas etc. are marketed, but the prices are not as good as they should be. Lingamadaiah feels that it is important to have a separate market for organically produced foods and for some organization to take up the cause of organic farmers.

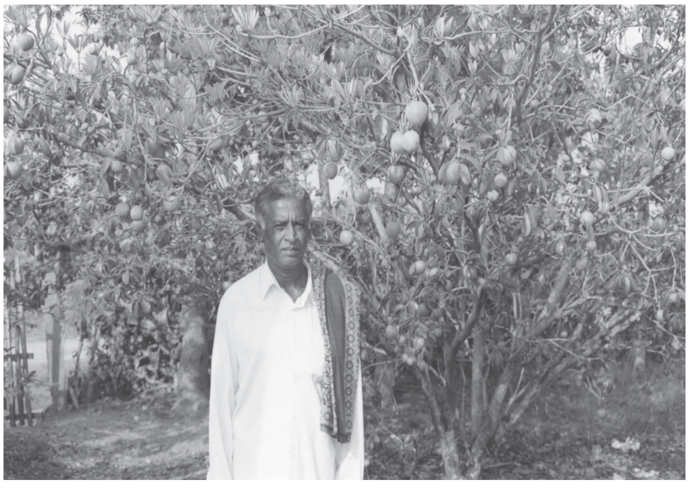
(Source: Communication with OIP)

RAMAKRISHNA

S/O Motegowda alias Narsegowda, Vitnena Halli
Village,Aralalasandra Post, Channapatna Taluk, Bangalore
District – 362138.

Despite stiff opposition from his father and brothers, Ramakrishna shifted to the organic mode of agriculture. On his farm he has planted many trees such as teak, silver-oak and other forest trees. Sapota, guava, pomegranate, vanilla and betel-leaf are also grown. An active and key member of the Sahaja Samrudha Samayana Krishikara Balaga of Bangalore district, he has been practising organic farming for the past ten years.

He only uses farm-yard manure, different oil cakes, green-leaf manure and other biomass available on his farm, for the purpose of enriching his soil. Pests are kept away through the spraying of cow's urine, neem oil and other such natural mate-



Ramakrishna in front of his organic chikoo trees rials. To harness water and to capture the maximum precipitation, this farmer has built ponds, bunds and trenches on his land.

Realizing that the unlimited use of chemical fertilizers and pesticides, in the past, had made the soil useless and polluted the air and water of the area, he now wants to maintain the air and soil in a natural way, by doing organic farming and saving the earth for future generations.

(Source: Communication with OIP)

PATIL SHIVGANDA MALAGOUDA

Vidyanagar, Athani - 591 304 Dist. Belgaum, Karnataka.
Cell: 9448432172

Patil's farm is located on the Athani-Masarapuppi road about 4 k.m. from Athani. Shri.S.M.Patil is a retired employee of the revenue department and took up organic farming after retirement. His ability to observe and self experiment have made him an exceptional farmer to emulate. Soon after retirement he took up agriculture full time on his 9 acres and 28 guntas land with the express purpose of organic farming and set himself to work, by learning from farm visits, workshops, literature and experimentation. Eight years down the line, today, his record horticulture produce and processing unit are fit feathers to be proudly sported on the organic farming movement's cap! Major crops grown on his farm are guava, sapota, lime, banana, mulberry, wheat, channa, chilly, onion, turmeric and all kinds of pulses. Annual income from the farm is 4-5 lakhs of which Rs. 30,000 to 40,000/- is debited to expenditure. Degraded land was reclaimed inch by inch with the whole family pitching in to create this highly productive organic farm. The farm is irrigated with bore well and sprincklers.

Shri. Patil uses jeev amrut, made from cowdung and cow urine, and uses EM and organic farm waste to prepare compost, using NADEP method. For preparing vermicompost he has built an organic waste digester on his farm which receives inputs of cowdung, sheep waste and crop wastes. The resultant liquid is applied to the crops along with the irrigation water.

The soils in his region have become alkaline and non-productive due to heavy irrigation. He is fortunate to have a farm which is situated in the dry region where the pests are relatively less. Whenever mild attacks are seen, he uses sprays prepared from cow urine, neem seeds, garlic and chillies.

All his neighbours practise chemical farming. However, some have now started to spray preparations made by him.

According to Shri. Patil, organic farming leads one towards a complete life. The objective of organic farming is not only bringing in sustainable agriculture practices but also a path for an individual's development towards completeness. His farm is certified by IMO.

(Source: Communication with OIP and P Babu)

PATIL VERMI FARM

'Shiva,' Behind Prasad Lodge, Gadag-582101, Karnataka.
Phone: 08372-237536

(Contact person: R.S. Patil)

Patil Vermi Farm does large scale vermi-composting. It also manufactures for sale the 'No Waste Vermi Home Garbage Digester.'

'No Waste' contains four trays and a lid. The upper three trays are used to fill garbage one by one. The bottom tray collects the excess water that drains out from the garbage and it must be emptied periodically. The last but one tray contains earthworm culture. This tray must be filled with garbage first, then the next tray up and finally the top tray.

By the time the topmost tray is filled with garbage, the lower most tray will be converted into odourless fine vermicompost. Empty this and keep it on top, shifting the other two trays down. The system continuously turns garbage to vermicompost. This device is rat and mosquito proof. For ant problem use Laxman rekha. Being mounted on coaster balls, 'No Waste' can be shifted around the home easily. All organic kitchen waste, old newspapers, leaves etc. can be composted in 'No Waste'. Once a year painting the unit ensures greater durability.

Size: 18" x 16" x 24". Price: Rs. 2000 (Ex. Gadag).

(Source: Brochure)

K. M. KUMBAL

(Contact: ICRA, Bangalore)

K.M. Kumbal's farm is located at Atharga village of Indi Taluk, Bijapura District. Bijapura district is a drought prone area with temperatures in the range of 40 to 45 C and scanty rain fall of 300 to 450 mm per year. Majority of the farmers are small and marginal. The land having lost its fertility over time due to chemical inputs, farmers are now losing their interest to continue with farming.

K.M. Kumbal's farm is situated 4-5 kms away from the village. He is from the farming community and involved in farming since 1960s. Between four brothers they own 24 acres (18 acres irrigated and 6 dry) of land. He resides at his farm house. To the right of the farm is uncultivated land with dry grass and trenches with bunds to absorb every drop of water. A 800 tree pomegranate orchard is being readied. The farm has sericulture, lemon plantation and chalky (silk worm rearing house) rearing centre. To the left is a cattle shed with Gir breed cows, gobar gas tubs, a gobar gas operated flour mill and open sheds. The family and labour together work the farm. Water is fetched from a distance to meet irrigation needs.

The farm has always been organic and enjoys good soil health. Even the dry lands got good yields. During kharif they intercrop sajje, navane, ragi, groundnut, horsegram, greengram and jowar, maize, wheat in the rabi season.Lime is a major crop on 12 acres of land, sericulture on 6 acres and 'improved' banana on 1 acre. Soil and moisture conservation activities like land leveling in the dry land, bunding, silt application etc. are routine practice. They have applied 6"-8" of vermi compost for 16 acres of land, used plant residues as mulch and adopted drip irrigation. Every alternate year, each acre of land is applied with 10 tons of compost, one quintal of vermi compost. He is planning to grow a pomegranate orchard in 3 acres of land, glyricidea and pongamia, seethaphal, bhilvapatre in 5 acres of land.

Lemon is the major crop in Indi taluka because of suitable soil and weather conditions. Lemon starts yielding after 6 years healthy 8 year old trees yield 5-6 thousand fruits per year, fruits are harvested twice in a week. The market place is Bijapur. The rate per 1000 fruits is Rs.400 and in the peak of summer rises to Rs. 1000. Organically grown lemon has better market, due to better keeping quality and juice content.

Sericulture farm is literally pampered with vermi compost and hence the soil is full of worms and very spongy. They harvest 7 crops in a year from July to February. Each crop, 400 eggs are purchased (CSR- Voltin and Kolar Gold varieties) from Chennapatna near Bangalore.The average expected yield for every 100 eggs is 65-75 kg. If all goes well, he gets 1.5 lakhs per year of which 30% is the expenditure. Inspite of constraints of high temperature and leaf infections, the sericulture unit is a success. This is because of being closely monitored and pest and temperature management techniques have been standardised to suit local conditions.

Gobar gas generator:

Kumbal has 4 gobar gas tubs of 13X 6 ½ ft. standardised size. From using it initially, for domestic and limited lighting, in 2002, he was the first in Karnataka to adopt it to run a 7.5 H.P. generator to run a flour mill, chaff cutter, slurry mixer, water pump, etc., saving him Rs.1500 per month on electricity bills.

Cows:

The 50 cattle capacity shed is put to good use, dung and urine are used for preparing compost, bio-input solutions, farm manure and for the gas plant. Fodder is farm generated. He gets 5-6 kg dung and 8 lts of milk from each cow per day.

District Organic Farmers Sangha:

Kumbal has organized farmers into a formal OFAI group with 78 members. Regular farmer meetings for knowledge sharing and spreading the organic message are held alongside technical inputs from experts. Farm visits are also undertaken.

(Source: P Babu)

KEMPANNA

(Contact: ICRA, Bangalore)

Kempanna has two acres of dry land and has taken another two on lease. He has no formal schooling and started working on a farm since the age of eight. Major crops grown are jowar and ragi. Cotton in combination with horse gram and castor are sown during kariff. A self taught expert in intercultural cropping, he has improved on his father's sowing patterns and innovated his own, thus producing better yields and putting in place water flow arresting systems on his farm. He is able to prepare twenty cartloads of compost on farm using dung of two local breed cows and crop waste from his farm and surroundings. He has perfected a technique of getting higher yield by protecting secondary roots. This combination of applying liberal quantities of farm yard manure, protecting secondary roots and water retention on farm has resulted in yields of 40-45 quintals from two acres while his neighbours' harvests stand at 10 to 20 quintals from 3 acres.

Kempanna is a keen learner, and says that since farming is the only thing he knows, he would like to fine tune his skill all the time, learning and experimenting with new innovations. He along with twenty other farmers have formed a local group to discuss matters collectively on a regular basis.

(Source: P Babu)

SOMANATHA REDDY POORMA

(Contact: ICRA, Bangalore)

Somanath Reddy a land holding of 21 acres, partly irrigated. The source of water is a open well, major crops are red gram, black gram, green gram, jowar and paddy.

During his father's time, there was no use of chemical fertilisers on their farm. They started farming chemically about three to four decades ago and he farmed chemically for twenty five years before switching to organic to save himself and his farm from certain disaster. The farm has been fully organic for the past seven to eight years now. He practices crop rotation, mixed cropping, seed treatment, nutrient management, pest and disease management along with soil and water conservation methods.

Ten to fifteen quintals of vermicompost, silt, trichoderma, 25-50 kg of neem seed powder are mixed together and applied to the farm as bio nutrients. NPV, bio-digester, garlic and chilly extract and neem seed extract are used to control the pod borer in red gram.

Reddy the is State convenor of OFAI and is recipient of many awards. Krishi pandit award from Karnataka Government, ICAR award for best pigeon pea crop, the list goes on. Besides being an expert organic farmer, Reddy is an expert yoga teacher and devotes considerable time to teaching it to youth and to the general public.

(Source: P Babu)

GANAPATHY BANDU JADAV'S FAMILY FARM

(Contact: ICRA, Bangalore)

Late Shri Ganapathi's is a big joint family having 50 members. Starting with three acres, one cow and one buffalo twenty years ago, they now have 30 acres of land and 22 head of cattle. Water comes from river Krishna. The crops grown are sugarcane, sericulture, cereals, pulses, wheat, red gram, groundnut and bengalgram. The farm is family managed. Responsibilities (like sugarcane, sericulture, animal husbandry, maintenance of tractor) have been allocated to each person of the family. Concerned persons take necessary decisions and actions according to allocated responsibilities. They are convinced from returns that there is a good income in organic farming, if done properly. Much support for their activities has come not from Government but fellow organic farmers and especially from SM Patil.

Organic sugarcane:

Sugarcane is the major crop, cultivated on 10 acres of land. In normal practice, the spacing is 3 feet. On his farm, 2 rows of spacing for every 2 rows of sugarcane is followed, so as to allow for absorbtion of more sunlight, allowance for splitting and greater root strength. Sugarcane is intercropped with groundnut and pulse alternatively.Mulch comes from sugarcane leaves, and the intercrop remnants. Jeev amrut, vermicompost, vermiwash, digestor solution and dung extract solution are applied at set intervals.

There is no separate market for organic sugarcane so they make jagerry which has a good market in Mysore, Shimoga, Bangalore, Hubli and places in Maharastra.

Sericulture: Since 1984 he has practised sericulture and takes ten crops annually from his two plots of three acres, each time keeping 500 eggs and making a clean income of about Rs. 3,00,000 per year with two quintals of worm droppings and left over leaf litter as bonus.

Mulberry cultivation: V1variety is cultivated. In the organic method, instead of ploughing, mulching is done by using organic waste. The spacing is 5x3 feet from row to row and from plant to plant 2x2. The crop is applied with 5 qtls of vermi compost, 200 lts of liquid spray and 60 lts (of jeevamrutha+vemi wash+EM mixture) mixed with 140 lts of water.

Ganapathy rears the cocoons in the hut and so far he has not faced any problems. He says, 'it needs sincere effort and discipline, time management, proper nourishment, maintaining of hygiene and temperature to get good yield and last but not the least, good quality of mulberry.'

(Source: P Babu)

VANASTREE - THE MALNAD FOREST GARDEN AND SEED KEEPERS COLLECTIVE

80/1, Asare, Vishal Nagar, Marathi Koppa, Sirsi 581 402,
Karnataka. Ph: 08384-290404, Cell: 09480299200, Email:
vanastree@gmail.com, Website: www.vanastree.org

(Contact person: Sunita Rao)

Vanastree is a voluntary endeavour, working with women in Sirsi and surrounding area to promote domestic and wild biodiversity in home gardens since 2001. It was registered as a trust only recently in June 2008. Sunita Rao is the founder trustee leading these efforts. Vanastree is associated with Kalpavriksh (Pune), ATREE (Bangalore), Prakruti (Sirsi), Sneha

Syed Ghani Khan and Organic Mangoes

Bada Bagh orchards managed by Syed Ghani Khan's family at Kirgavalu in Malavalli taluk of Mandya district is home to rare varieties of mango trees yielding fruit with over 100 unusual flavours. The orchards, dating back to mid eighteenth century - the period of Tipu Sultan's regime – were maintained to serve the royal tables.

The 20 odd acre orchards have 116 varieties of mango trees, most of which are not available in markets outside Kirgavalu. This wonder orchard came to public light in the summer of 2009 when Syed Ghani participated in the Organic Mango Mela at Ernakulum, Kerala.

Bada Bagh was part of a large mango orchard that was maintained during Tipu's time. While many in the neighbouring area changed over to paddy cultivation with the introduction of irrigation canals in the area, Syed Ghani choose to retain his orchards.

The National Bureau of Plant Genetic Resources (NBPGR), New Delhi has recently numbered these 116 trees and has initiated the process to take gene pool samples for research of this rich king of fruits diversity. The varieties include Mangamari, Pikha Aam, Seb Ka Aam, Musambi Ka Aam, Aate Ka Aaam, Moti Ka Aam and others. There are also varieties that are harvested twice a year.

The mango trees maintained by the Syed Ghani family from Tipu Sultan's period

Each tree on an average yields 500 kg of mango. However about 10 to 15 trees in the orchard bear two to three tons of fruit. Syed Ghani says these trees require minimum maintenance. He planted about 80 Alphonso mango about seven years ago. They too have began to fruit.

Sahaja Samrudha has been instrumental in having DNA fingerprinting and gene mapping tests conducted on these varieties at the Horticulture Department's Biotechnology Centre at Hulimavu, Bangalore. The tests have found each variety to be unique.

Syed Ghani is cultivating 30 varieties of traditional paddy for conserving its gene pool and grows some sugarcane for commercial purposes.

On being asked if he has started a nursery to propagate these unique varieties of mango, he answers in the negative and says he is not skilled in nursery techniques, but would very much like to do so if he is provided with technical expertise in these matters.

Syed Ghani sells all his mangoes in the local market.

[Contact: Syed Ghani Khan, No.190/1, Roushan Jamiya Masjid Road, Post Kirgavalu, Taluka Mallavalli, Dist. Mandya - 571 424, Karnataka. Cell: 09901713351]

(Source: Teleinterview with OIP)

Dr Sujata and Dr Anurag Goel relax at Rainforest Retreat

Kunja (Honnavar), TEED (Yellapur) and affiliated to OFAI. Their activities include outreach, development, training, research, documentation and conservation oriented enterprises. They reach 500 gardeners and farmers directly in Sirsi and through other groups in neighbouring talukas.

Vanastree works through decentralised regional seed banks with each seed group saving specific local indigenous vegetable seed diversity. It is an all women initiative with male membership too.

The garden produce is used for home consumption, sold retail as fresh vegetables and excess is processed. All kinds of local vegetable varieties like amaranth, brinjal, okra, gourds, pumpkins, cucumbers (including the malnad maggaykai cucumber), coccinia (thondekai), various greens, beans, chillies, tubers like colocasia, dioscorea, amorphophallus, tumeric, ginger, mango-ginger; ground nut, maize, cow pea, urad dal, green gram dal, paddy, ragi, fruits and flowers are grown.

Though there is no permanent outlet yet, processed foods are sold locally , at melas and exhibitions. Holi colours from natural dyes are made once a year. Dry banana is made round the year and is in good demand locally.

Their other products and services are:

Seeds & saplings; seed packets; forest nursery: wild saplings

Traditional sweets & snacks: Nelli (amla) candy, kokum candy, jackfruit (halasu) chips, jackfruit papad (halsina hapla), dried jackfruit, sukkeli (dried banana chews), banana chips, todadevu, panchakajjaya, chakli/muruku, athrasa, karajikai, holigay, 7-cup burfi, wheat flour.

Traditional chutney & herbal powders: Chutney powder, flax chutney powder, wild curry leaf chutney powder, tambli pudi (various like nelli, brahmi, wild curry leaf, vilva, etc), kashaya pudi.

Traditional remedies: Nelli supari (gooseberry digestive and mouth freshener), nelli leha (gooseberry immunity booster).

Spices & seasonings: Kokum: sun-dried rind, vatay (lakooch): hand pounded powder, bay leaf (dalchinni yellay): whole shade-dried leaf, Malnad Needle chilies (sooji menasu): whole sun-dried chilies, cardamon (yallaki): whole sun-dried, clove (lavanga): whole sun-dried cloves, nutmeg (jaikai): whole sun-dried nut, mace (patre): whole sun-dried mace, pepper (kalumenasu): whole sun-dried pepper corns, turmeric (arishina): sun-dried milled powder, vanilla: whole sun-dried beans.

Preserves, pickles & juices: Nelli morabba, nelli jam, kokum juice, pineapple-ginger preserve, lemon pickle, mango pickle.

Dairy: Ghee

Honey bee products: Apiary honey, wild honey, beeswax balm.

Other products: Holi colours, vegetable paints, kumkum, herbal hair oil, massage oil

Crafts: Patchwork bags, kowdies (hand-sewn patchwork quilts), seed jewellery.

Services: Homestay, educational camps, internships.

Products are best sourced at the annual Malnad mela in Sirsi (first week of June) or at the annual exhibitions in Bangalore. They are in the process of being able to supply produce more regularly to outlets.

(Source: Communication with OIP)

MOJO PLANTATION

Galibeedu Post, PO Box 101, Madikeri 571 201, Karnataka.
Ph: 08272-265636 Email: mojoplantation@gmail.com
(Contact: Dr. Sujata Goel)

The Mojo Plantation is a farm nurtured on ecological principles in the midst of the Western Ghats by two former research scientists (who left behind the race of urban living and academic research in search of a life in harmony with nature), and (their young daughter) Maya.

Mojo Plantation is located in one of the highest rainfall zones of Kodagu District which lies in the heart of the Western Ghats in Karnataka and is densely forested with native trees. While this environment places limitations on the types and quantities of crops we can grow it creates its own unique flavours which are reflected in the quality of our organic produce.

The most attractive feature of this area is that local crops such as cardamom and pepper (indigenous to the W. Ghats) and coffee (introduced) are grown under the shade of rain forest trees. Therefore, much of the biodiversity can be preserved. Most plantations in Kodagu are abundant with diverse species of trees, birds, reptiles, small mammals and a fascinating array of spiders, lepidopterans and insects. However, excessive use of fertilizers and toxic pesticides pose a serious threat to the biodiversity of this region and therefore it is all the more necessary to adopt sustainable agricultural practices. We have been completely organic for the past 12 years and have encouraged others to do the same.

Our major crops are cardamom, coffee, black pepper, vanilla, kokam, fruits and some tree spices. These are sold in the domestic market largely as farm processed and packaged produce. We also grow a variety of fresh foods for inhouse use at our guesthouse, Rainforest Retreat.

Organic Practices

The rain forest offers an amazing range of both animal and plant species and a rich detritus in the soils. The field is a complex ecosystem that cannot be evaluated upon merely its NPK content and requires one to consider the soil as a living system. Our endeavour is to strike a balance between time-tested traditional practices and modern scientific approaches. We encourage multiple cropping and have much of the cardamom intercropped with the vanilla on the base of the valleys, whereas the coffee and spice trees are grown along terraced slopes which are contour-bunded. Black pepper vines grow on the native tree species. Additionally, the forest canopy is maintained to harbour the diverse resident plant and animal species as well as to conserve the fragile top soil. Canopy shade is regulated to enable about 60 per cent light on the crops. Part of the forested lands are left uncultivated.

The weeds found on the land here are diverse and we conserve their populations through use. Weeds are invaluable in providing biomass which we require in abundance for composting, mulching to keep the soil moist and protected, and for returning nutrients back to the soils. Weeds also create native habitats for all the other supportive species which constitute an integral part of the ecosystem. Initially, we had developed mixes of plant extracts which we used for curtailing populations of stem borer, a major pest of cardamom, the larva of a moth (Conogethes punctiferalis). Since most of these were repellents, spraying them on the cardamom crop encouraged the pest (and other sap suckers) to move into the uncultivated areas in the valleys. Over the years, we have been able to build up an amazing range of predatory populations like birds, spiders, dragonflies, mantids, frogs, shrews, wasps, etc, who are now actually doing all the pest control work for us. We have not used any sprays for pest control in the last 6 years. We still have the borer moth; however, these are no longer above pest threshhold levels.

We feed our plants with the compost prepared on the farm. The major components are the native weeds which already have the nutrients required for plants to grow. The trick is to bring it into a recyclable form in a cost effective and efficient way. We mix in cow dung, farmyard wastes, wood ash, and drench it with a mix of EM (Effective Microorganisms, which is a mixture of native soil bacteria). The bacteria can be propagated in mollases and help in rapidly breaking down and mineralizing all the organic matter. Conventional methods took us 6-8 months to prepare good quality compost. The use of EM enables us to have excellent friable and sweet smelling compost ready in two months under our conditions. We do not use any external inputs, and all organic matter is recycled. We occasionally use traditional preparations like Panchkavya and cow urine (composted) as supplementary liquid manures.

We collect, save and share seeds and maintain nurseries for all crops. The location is changed every year to avoid pathogens from developing in one area.

Energy

Solar energy is tapped for electric lights and a part of the irrigation. Bio gas (from cow dung) is used for the kitchen. All domestic wastes are recycled into compost using EM. Water is harvested for irrigation and domestic use.

Our learning:

Organic farming is an integration between plants and our animals like the cattle, poultry, ducks, geese, turkeys, dogs and goats are invaluable in complementing all the agricultural activities on the farm. We have come to realize that it is only when farming is based upon 'natural principles' can it be truly sustainable. Ecological farming is based on nurturing and nourishing the soils. Having healthy predatory populations within the agri-ecosystem naturally reduces the pest damage caused to crops. Having genetic diversity amongst the cropping system also enables us to select and maintain resistant clones. The heavy rainfall zones in the Western Ghats have a fragile ecology and are extremely prone to soil erosion. It is important to try and adopt agricultural practices which emphasise soil conservation and build up of organic matter rather than conventional farming techniques which depend upon heavy use of chemical pesticides and fertilizers that destroy the natural balances and lead to further destruction of this rich environment.

The land can only continue giving if we return to it what we take from it.

Products

Our certified plantation products are: Gourmet filter Coffee, Cardamom, Garcinia, Black Pepper,Vanilla Beans, Green Tea and Black Masala Tea. All products are available by mail order nationally and internationally.

Eco-Retreat

The Rainforest Retreat is a unique eco-lodge that enables the experience of living in harmony with nature. www.rainforestours.com

Education Outreach Programme

We also organize and host workshops and educational programs with emphasis on organic farming, sustainable living, rain forest ecology and biodiversity for students and special interest groups such as organic farmers.

(Source: Communication with OIP)

I K SUBBAIAH

Prabhu Estate, Mythadi Village, Via Virajpet, Dist. Kodagu, Karnataka. Ph.: 08272 201355, Cell: 9448219355, Email: lifecoorg@rediffmail.com

I.K. Subbaiah's farm is located at Mythadi in Kodagu. After farming chemically for one year he has switched to organic farming for the past 7 years. Turmeric, ginger, cardamom, pepper, coffee, guava, banana and pineapple are cultivated. Surplus is marketed. He follows compost preparation and application on his farm and believes that compost application in the initial years is very important and apart from this one may introduce various sprays. Compost application should be done around the drip circle of the plant and mulching of the compost is very important otherwise the compost dries up when there is excess sun and it gets leached out when there is excess rain. The compost should have all the heat that is generated while de-composing. The estate also has a floriculture section growing Heliconia & Musa species and Torch ginger and supplies as many as 1000 anthuriums per week to markets in Bangalore.

His farm produces special varieties of paddy: dhodi and jeerage sanna. Presently dhodi is being lab tested for fiber and protein content.

Prabhu Estate also offers farmstays at reasonable costs.

Details of tariff and product list is available from www.organicassociationkodagu.org/Prabhu Estate.html

(Source: Communication with OIP)

A.D. KULKARNI

At/Post Sotakanal Naganur, Navalagund Taluka, Dharwad District, Karnataka.

Kulkarni is a graduate with 25 acres of irrigated and 25 acres of dry land, all of it black cotton soil. He was previously employed in a city, but after coming in contact with Pradeep Tapas was inspired to live in his village. He produces a lot of vermi-compost, the excess of which is sold. He grows cotton, cereals, maize and chillies and has a dairy. He has developed organic plant sprayers which are available for sale.

(Source: D.D. Bharamagoudra)

DR D.C. GADDI

At/Post, Malasamudra, Gadag Taluka, Dharwar District – 582 101, Karnataka. 08372-

A veterinary doctor who resides on his farm, Dr. D.C. Gaddi owns eight acres of land on which he grows good mulberries, brinjals, tomatoes, other vegetables, flowers, coconuts, lemons and tamarind. On a small patch, he grows foodgrains for home consumption. He also maintains a dairy.

(Source: D.D. Bharamagoudra)

GOPAL B. KULKARNI

830/1 Shitavani Shivaji Nagar, At Rattihalli Tq Hirekerur, Dharwad Dt., 581116 Ph: 08376-286052

A graduate farmer who is staying on his farm, Kulkarni has four acres of irrigated land and seven acres of dry land. On the irrigated land he grows jasmine (one acre), coconuts, sapota and green fodder. On the dry land he grows cereals and pulses for his home consumption. He also does sericulture. Within four years of switching to natural farming, he has no problem with yellow leaf disease in the jasmine fields.

(Source: D.D. Bharamagoudra)

G.C. VIJAYARAGHAVA

At Guddetota, Post Shantigram, Koppa Taluka, Chikkamagalur District, Karnataka.

This farmer's coffee plantation and nursery are located on a beautiful hillside. Gravitational irrigation is provided from a tank constructed on top of the hill. He also grows areca nuts and spices. He has five years experience in organic farming.

(Source: D.D. Bharamagoudra)

KRISHNA KRISHI ALTERNATIVE AGRICULTURE ASSOCIATION

Hulakoti, Gadag Taluka, Dharwad District, Karnataka.

(Contact: Pradeep Tapas)

This five-year old trust is looked after by Pradeep Tapas. It has a 52 acre farm, with hard red soil and three bore wells. 10 acres are for dry land farming; 16 acres are planted with mango, guava and chikoo, wind breakers and live fences. The farm has sericulture and makes vermicompost. The project provides for experimentation in agriculture. Training farmers is also another aspect of its work.

Tapas is an engineer and a follower of Sri Aurobindo and the Mother. He has 10 acres of land in Bedasgaon in Mungod Taluka, Uttar Kannada District where he grows coconuts, cashews and mangoes. He has 2000 rose plants. He plans to cultivate exotic vegetables like artichoke, red cabbage, asparagus, etc. He is conversant with various aspects of sustainable agriculture including organic farming, permaculture, biodynamics, etc.

(Source: D.D. Bharamagoudra)

K.A. JAGADEESH

At Karimane, Post Kalkere, Koppa Taluka, Chikkamagalur District – 577 123, Karnataka.

Jagadeesh has been practising organic farming for the past nine years on 40 acres of land in an area of heavy rainfall. The main crop is coffee. He has recently 'inter-planted' coconuts, pepper and cardamom. His coffee yield remains normal, but he says he has yet to work hard. He is very interested in biodynamics. December to January is a good time to visit the farm.

(Source: D.D. Bharamagoudra)

K.N. RAJENDRA

At Bindravalli, Berukudige Post, Koppa Taluka, Chikmagalur District – 577 126, Karnataka.

Rajendra has 2.75 acres of arecanut and one acre of coffee (newly planted). He has been practising organic farming for the past five years and getting good yields. The area is hilly and has heavy rainfall. He uses Bordeaux mixture for arecanut. He, his brother and father work on the farm.

(Source: D.D. Bharamagoudra)

K.T. NAGENDRA RAO

At Golgar, Post Kasave, Koppa Taluka, Chikkamagalur District – 577 126, Karnataka.

He cultivates six acres of arecanut, three acres of paddy and two acres of vanilla. He has been practising organic farming since 1990. He uses Bordeaux mixture for arecanut. Spices grow in his arecanut garden. He uses compost, bio-fertilizers and mulch. He had very low yields in the first two years, but now gets good yields. He also uses neem cake for his plantations of nutmeg, arecanut, pepper and cardamom. For paddy he uses compost, cow urine spray and 'yayavillanga' (this is the seed of a plant) spray.

(Source: D.D. Bharamagoudra)

N.S. NAGABHUSAN

At Nilavare, Post Tenginakoppa, Tirthahally Taluka, Shimoga District – 577 414, Karnataka.

Nagabhusan has been practising organic farming since 1990. He has tried a lot of experiments, using different farming practices and different varieties of crops. The soil has now become fertile, and after four years of organic farming he is getting fairly good crops. He has tried short and tall varieties, local and improved varieties. He is cultivating paddy, arecanut, betel vine, pepper, banana, nutmeg, cardamom and other spices. He uses compost, green manure, mulching and neem cake as manure and grows pesticidal plants to ward off pest attacks. (Source: D.D. Bharamagoudra)

S M MANGALI

Post Shirahatti, Taluka Gadag, District Dharwad – 582 120, Karnataka.

S M Mangali, 75, is a retired school teacher. He has been doing organic farming for the past decade with the assistance of his son, on seven acres of farmland. He believes that organic farming is a way of life and must extend to influencing the way we live and the choices we make.

For a few years they ran a dairy but once they decided to go in for sericulture the dairy project had to be abandoned as it was not possible to give attention to both.

Mangali has been identified as one of the grassroots innovators in Karnataka by the Honey-Bee Network. He has designed a hand-operated weeder, a low cost and handy instrument that reduces physical strain in weeding operations. He has also designed new types of trays for the rearing of silkworms that reduce space requirement considerably, thereby bringing down the costs of construction of rearing houses. These trays can double the capacity of the rearing houses.

Mangali believes that community effort is more beneficial and rewarding than individuals striving on their own and therefore sees the blooming of the organic farming movement as a good sign for the future.

(Source: Communication with OIP)

SURESHGOUDA PATIL

Shivraj Agri Brothers, Post Hulakoti, Taluka Gadag,District Dharwad – 582 205, Karnataka.

Sureshgouda Patil is a young, dynamic agriculturist, practising organic farming since 1990. His land has rich, black soil in some parts and poor, red and sandy soil in others. The region receives around 45-62 cms of rainfall each year.

To start with, for up to six years, Suresh used vermi-compost that he had prepared on 33 beds on his own land, in the ratio of 2-4 MT per acre. In the sixth year he could see that there were around 8-16 earthworms per cubic foot on his land. Thereafter, he started directly adding farmyard manure to his land and also mulching agricultural waste from cotton and chilly with the help of tractors and rotovators. The water retention capacity of the land increased, resulting in increased yields.

Sureshgouda grows cereals, pulses, cotton, chillies, oil seeds and onions. Products from his farm fetch a minimum 25% greater price in the market. He has been demonstrating his experiences in organic farming to other farmers in the village. From October till the end of January is a good time to visit his farm.

(Source: Communication with OIP)

SUBRAYA B. HEGDE

At Mattiha, Post Tyagali, Siddapur Taluka, Uttara Kannada District – 581 340, Karnataka. Phone: 08389-281508

A young farmer, Hegde has three acres of paddy land and four acres of arecanut plantation mixed with cardamom, pepper, nutmeg, cloves, coconuts, bananas, etc. Many varieties of cucumbers and vegetables are also grown. He has 10 cows and a power tiller. He has been practising organic farming since 1989.

He uses dry and green leaves from the nearby forest for compost. In December, he puts the compost and greens in the paddy field and grows pulses after the paddy. Cow manure and urine are used in his agriculture. Sowing is done before the new moon day. Gas plant slurry is used in compost making.

Time to visit: September to January-February.

(Source: D.D. Bharamagoudra)

HEMANT KUMAR

No. 20, UAS Layout, RMV II stage, Bangalore – 560 094, Karnataka. Cell: 099722-31707, Email: sylvanparadise@rediffmail.com

The 25 acre farm is located in Belavatagi, Dharwad. After farming chemically for 10 years he converted. His farm has been organic for the past 12 years. He grows wheat, maize, sorghum, chilli, cotton, sapota, green gram, bengal gram, red gram, safflower, linseed, onion, nizer etc. on his farm

Hemant Kumar's produce goes to the general market. However, 75% of his produce is purchased by neighbouring farms as seed. He claims with pride that his produce is so appreciated that the bulk is used as seed.

(Source: Communication with OIP)

SRI BASAVESHWARA SWA SAHAYA SANGA

613/1, Srivenkateshwara Nilaya, K.T.J. Nagar 15th Cross, IIIrd Main Davanagere - 577 002, Karnataka. Tel: 08191-282008, Cell: 09448944506

(Contact: R. Vijayakumar, Secretary)

R. Vijayakumar, has been involved with issues relating to organic farming for the past 6 years. His organization is a farmer group that has 100 member farmers who grow organic mangoes, exported through APEDA, Delhi under the brand name 'Peacock.'

(Source: Communication with OIP)

DR. DEVANGI R. PRAFULLACHANDRA

'Krishi Sampada,' Hosahalli Village (Lakshmipura), Shimoga 577 201, Karnataka. Ph.: 08182-272730, 229128

Crops grown: Sugarcane, arecanut, coconut, coco, banana, pepper, vanilla, cinnamon, fruits, Silvi-Horticulture and bamboo.

Dr. Prafullachandra is well known in organic farming circles in Karnataka and around the length and breadth of the country for his contributions to innovative low cost farming techniques. He is known for the introduction of multi-storey cropping, efficient irrigation practice, recycling of organic wastes, developing innovative farm tools and areca processing methods.

He started his farming practice in the early 1960s and has evolved into a farmer par excellence. Recipient of numerous national and international awards he is often referred to as 'fountainhead' of creative ideas in farming. University of Agricultural Science, Dharwad conferred on him an honorary doctorate in 1995.

His contributions in Ratoon Sugarcane is unique. He has been practicing Ratoon Sugarcane plantation under zero cultivation since 1968 and holds a record for Asia and Pacific Region countries for growing ratoon sugarcane from a single plant since 1968.

His innovative method of coconut cultivation along with legumes has yielded more number of nuts than the record average. The multi-storey method of areca plantation along with cocoa, banana, pepper and vanilla is now being emulated by many areca planters.

Dr. Prafullachandra's farm is a living laboratory where dozens of farmers, scientists and government agencies visit every day to learn from living practices.

(Source: Booklet on Dr. D. R. Prafullachandra)

ORGANIC ASSOCIATION KODAGU

www.organicassociationkodagu.org

Email: info@organicassociationkodagu.org

The Organic Association Kodagu (OAK) was founded in 2007 by several like minded organic farmers endorsing an eco-friendly way of life. The aim is to raise awareness about organic farming and spread the market reach. OAK meets bimonthly.

Presently Asha Kiran Estate, Craigmore Estate, Golden Mist Plantation, Mojo Plantation, Palthope Estate and Prabhu Estate are its members. Some farms offer farmstays and learning opportunities. Respective farms may be contacted directly through individual sites , all accessible from the association website.

Their collective produce range covers coffee, tea, spices, fruits, flowers and indigenous rice varieties. All are certified farms.

(Reference: Website)

ORGANIC AGRICULTURE IN TIBETAN SETTLEMENTS- BACK TO NATURE

Settlement Officer, Office of the Representative, Dhondenling Tibetan Settlement, P.O. Tibetan Settlement No. 571 457. Kollegal, Chamrajnagar Distt., Karnataka. Ph: 08225-273244, Fax: 08225-273164, Cell: 09448958862, Email: repdhonling2002@yahoo.co.in, Web: dhondenlingorganic.org

Background

In 1959, Tibet suffered the worst tragedy in its history, forcing His Holiness the Dalai Lama and nearly 80,000 Tibetans into exile in neighboring countries. Upon arrival, the Dalai Lama decided that the Tibetans would lose their culture and identity if they did not live in cohesive units. With the assistance from the Government of India, NGOs, individual do-

Nandish and Legume Culture

'This is Legume Culture,' proclaims B. N. Nandish of Shikaripur taluk, Shimoga district. At first, one does not notice any visible difference till Nandish begins to explain how the soil is enriched.

'This farm is nothing but a nitrogen fixing factory! One hectare of atmosphere contains 75,000 to 80,000 tons of nitrogen, which accounts to almost 80% of air: As you know nitrogen is most nutritious and plants require it in large quantities. Only plants of leguminous family have rhizobium bacteria in their roots. Only these bacteria can fix nitrogen in the roots of the plants, absolutely free of cost.'

Nandish is growing legumes in different cropping patterns and getting tons of nutritious nitrogen for his plants free of cost. For this he is growing different crops which can fix atmospheric nitrogen. The collection of legumes has now crossed hundred, ranging from annual, perennial. herbs, shrubs, climbers, aquatic, trees, creepers to some being spring, winter and summer legumes.

Apart from providing biological nitrogen, some legumes provide grains, pulses, fodder,timber, fuelwood, natural dyes, medicines and also work as wind breakers. For each type of nutrient there is a particular crop, hence the whole land is enriched with all the necessary nutrients. As if this were not enough, he also uses mulch to enrich the soil. For this he uses green fodder. Two months before monsoon, he sows all types of plants in the field, and provides sufficient water and organic manure. He makes sure that oil seeds, millet, corns, weeds, 'rooty' plants, beans, etc are included. Within six months, all enter flowering stage. These are then crushed by bullocks or tractor, watered and left to decompose. By the time monsoon arrives , the land is rich and ready to receive the 'real' seeds.

By following this method, Nandish saves a lot of money on fertilisers and pesticides. And adds, 'With mulching, most of the weeds perish and become rich fertilisers themselves and over the years the weed population goes on diminishing. The result: a good harvest at much less expense and labour. It is the simplest method and anyone can follow it. It saves labour and costs close to nothing. There is no complex technology involved, all the work is left to nature.'

(Contact:B.N.Nandish,Chrchugu ndi,Shikaripur taluk,Shimoga dist. Ph:9845553078)

(Source: Sahaja Samudra)

Tibetan farmer at Mysore settlement with organic SRI

nors and with the faith and tenacity of the Tibetan refugees themselves, more than 50 Tibetan Settlements were established in India, Nepal and Bhutan. Most of them are agricultural based. The five Tibetan Settlements established in Karnataka, account for approximately 40 % of the total Tibetan population in exile.

The Dhondenling Tibetan Settlement, Kollegal is one of the five major settlements. 3121.14 acres of land was provided for rehabilitation in the vegetative reserve forest, located in Odeyarpalya, Kollegal Taluk, with a total cultivable land area of 2407 acres. The settlers practiced chemical agriculture till recently and were initiated into organic farming only in 2003 by Central Tibetan Administration (CTA) and the Dalai Lama's Central Relief Committee (CTRC). Dhondenling Tibetan settlement has been adopted as a Model Organic Settlement.

The objective is to uphold the rich knowledge of traditional farming and to convert the present chemical based agriculture practices into more reliable and healthier organic based agriculture practices. Support farmers with marketing assistance, authenticate produce and take agriculture back to ecologically sustainable ways.

So far, of the 22 villages, three villages have converted 461 acres of their land to organic cultivation. Gaining confidence from them, the farmers of other villages are gradually converting their share of land into organic. The strategy used is to first stabilize natural resource base. This would enhance yields in kharif crops and create possibilities for the second crop on more favorable lands.

Sahaja Samrudha is facilitating this endeavour through trainings, workshops and field support.

MUDDERESHWARA ORGANIC FARMS

Office: 147/2, 5th Main, Chamarajpet, Bangaore 560 018, Karnataka.

Farm at: 9th KM, Anekal – Hosur Highway, Bangalore Suburb, Thimmasandra (V) Sambandur Post.

For Trade: Ph: (080) 22422709, Fax: (080) 26612663, Farms: 095811 065 4996, Cell: 094488 18704/98807 12852

Muddereshwara organic farms grow and sell the following:

- Stevia (seedling and foliage)
- Patchouli (Aromatic) seedlings and foliage
- Banana (exotic varieties)
- Papaya
- Capsicum
- Aromatic, medicinal plants, herbs and culinary plants
- Range of organic vegetables and fruits
- Specialists in organic vegetables seedlings and banana suckers

(Source: Brochure)

GREENPEACE

No. 60, Wellington Street, Richmond Town, Bangalore 560 025, Karnakata. Ph: 080 41154861, Fax: 080 41154862, Cell: 099720 99738, Email: smitha.rao@greenpeace.org, Web: greenpeaceindia.org

Greenpeace is an independent global campaigning organization that acts to change attitudes and behavior, to protect and conserve the environment and to promote peace. The organisation has recently published a major critical report on why it is necessary for Indian agriculture to move from chemicals to vermicompost.

Gopi – SUSAG (sustainable agriculture)

(Source: Communication with OIP)

ASR HERBALS

71/2, 21st 'A' Main Road, Marenahalli, J.P. Nagar II Phase, Bangalore - 560 078, Karnataka. Ph: 080-26493204, Fax: +91-80-26651157, Cell: 98450 06451/98451 96473, Email: stevier@asrherbals.com, Web: www.asrherbals.com

Product: A zero calorie herbal dietary supplement

Stevia rebaudiana: Madhu patra

Leaf powder, liquid extract, unrefined stevioside, refined stevioside, mouth wash, tooth gel, sugarless supari, diet mitha paan.

(Source: Brochure)

The Rice Growers of Nisarga Foods

NISARGA ECOPRODUCTS

570/1 'Padmashri Nilaya', III Main, IV Cross, N.S. Palya, BTM II Stage, Bangalore 560 076, Ph: 080 26784509, Fax: 080 26591729/080 26680995, Email: greenfound@vsnl.net, green@greenfoundation.org.in, gfbangalore@gmail.com, Web: www.greenconserve.com

1. Basumathi (local scented) Rice: This variety can also be mixed with other rice varieties for consumption. It tastes good and has unique flavor.

Shri. Basavaraj, 45, from Aralagadakalu village, Mysore has been growing Basumathi for the last 4 years in his 2 acres farm. He grows about 50 bags annually and retains 15 bags for home consumption. The surplus is sold.

For growing Basumathi organically, farmyard manure and vermicompost are used. His experience is that if chemical fertilisers are used for growing Basumathi, it is susceptible to disease and pests. The fodder yield is good, even the straw has aroma and the grains are comparatively heavier than other varieties. When milled, it gives 65 kgs of rice per quintal as compared to 50 kgs from other varieties. The variety has a good market.

19 more farmers grow the same variety in his area.

2. Red rice (Doddabaira Nellu)

Shri. Venkatappa, aged 90, lives in Kunigal village, Tamil Nadu. Growing of red rice by his family dates back to more than 250 years. He grows paddy in 6 acres of land and harvests 90-100 bags a year. Just 10 bags are retained for family consumption. The remaining produce is sold. It is suited well for organic cultivation. In his experience, if DAP is applied or chemical fertilisers are used, it tends to lodge and the seed become chaffy resulting in crop failure. This variety grows profusely in extreme conditions and 10 day old young plants can withstand without rain for 2 months. He has not seen the crop getting infested. The crop is highly profitable due to minimum external inputs. When milled, it gives 65 kgs per quintal, whereas other paddy variety yields 50 kgs per quintal. There is a great demand for this variety in the market.

According to Mr. Venkatappa the Red rice has high nutritive value just like ragi. It has good cooking quality and can keep for two days after cooking.

More than 25 farmers grow this variety in Kunigal village and over 100 farmers grow it in the surrounding area.

3. Sannavalya

Shri. Srivatsa of Chakkodabailu, Thirthahalli, Shimoga district, has been growing Sannavalya variety for generations. He is a young progressive organic farmer conserving this variety. Due to its excellent food quality, he has been growing it for many years for both consumption and for the market.

One of the special characteristics of this variety is that it survives even in flooded conditions. Though this variety originates from the Malnad region (Western Ghats) of Karnataka, it is very popular in other regions as well for its taste and cooking quality. The rice is red in colour, soft when cooked and has an appealing aroma.

4. Chinnaponni is originally from Madhurai region of Tamil Nadu state. It is a farmer-developed variety: a short duration crop growing to a medium height requiring less water. It does not lodge.

Smt. Kempamma aged 50, lives in Kanavemadhapura. She has been growing Chinnaponni for 5 years in her 2 acres of land and gets 70 bags of paddy. Half is retained for the family's consumption and the rest is sold. The grain is small in size, but enlarges on cooking, has good cooking quality and is slightly sticky.

She uses farmyard and green manure on her farm. Kempamma has distributed seeds to more than 20 farmers in her village. Over 60 farmers in the area grow this variety.

5. Mysore Mallige: This variety is originally from Philippines. It was identified and developed by Mr. Lingamadaiah of Channapattana taluka, Bangalore rural district. The variety is pest and disease resistant and does not lodge. It is a fine variety and has very good cooking quality.

Shri. T.N. Shankarappa, aged 55, is the resident of Therubeedi village, Bangalore rural district. For more than a decade, Shankarappa has been growing Mysore Mallige. He borrowed seeds from a farmer in the neighbouring village. He grows this variety in one acre of his land and harvests 35 bags annually. He retains few bags for his family consumption and the rest is sold in the market.

6. Sanna Munduga a dryland drought tolerant variety, is on the verge of extinction. Only two known farmers are growing this variety.

Smt. Kalibai, aged 60, Sheethalwadi village, Kanakapura Taluk, Bangalore rural district. Her family has been growing Sanna munduga for the last 2 generations. She grows this variety organically on a one-acre farm and harvests about 25 bags annually. The whole produce is kept for her home consumption.

Shri. Nanjunda of Saraswathinagara is the other farmer growing this variety of rice. The seeds were originally borrowed by his family from kalibai about 20 years ago. He grows Sanna munduga on one acre of land. The land yields about 22 bags of which 5 bags are retained for home use.

A small quantity of farmyard manure is sufficient for a good yield. It can be either broadcast or transplanted depending on the type of cultivation - dryland or irrigated. The grain is brownish in colour, has good taste and can keep for two days after cooking. When milled, it gives 65 kgs of rice/quintal.

7. Karidadi Budda is an indigenous variety of Chinnikate village. It can be grown in irrigated and dryland conditions, yields good fodder and has good cooking quality.

Shri. Shrenik Raju's family of Chinnikate village has been growing this variety for 2 generations on one acre of land. He harvests about 16 quintals per year, half of which is retained for self consumption.

He uses the plough for sowing the paddy seeds instead of Kurige. Farmyard manure and vermicompost is applied to enrich the soil.

More than 25 farmers in Chinnikate and Kasambi villages grow this variety.

8. Salem Sanna is originally from Salem region of Tamil Nadu state.

Shri. Shankar Guru of Modarahalli, T. Narasipura taluk, Mysore district has been growing Salem Sanna for the past 12 years with the express purpose of reviving and conserving it. Shankar Guru frantically searched for this variety and travelled to many places to locate it. He grows this variety for both selling and for home consumption. He harvests about 28 quintals in an acre and retains 8 quintals for home consumption and rest is sold. Green manure, sheep and goat manure are used to enhance the soil fertility. He is experimenting with Madagascar method to cultivate this variety.

Presently 10 farmers grow this variety in T.Narasipura Taluk, Mysore, District.

9. Raj Kamal

Shri. Nanjunda of Saraswathinagar grows Raj Kamal variety on 2 acres of his 3 acres farm. It grows to a height of 3 feet. When cultivated organically, hardly few chaffy seeds can be seen.

If fertilisers are applied the plant tends to become lanky resulting in lodging. Lodging leads to failure of crop. The annual yield is about 50 bags of which the 30 bags are sold. On milling it yeilds 68 kgs per quintal.

The grains are egg shaped and light brownish in colour. It has good cooking quality and taste.

Over 10 farmers grow Raj Kamal in his area.

10. Gandhashale is a scented variety with a pleasant aroma. Grains are small and light cream in colour. This variety is originally from Malnad region of Hassan district of Karnataka. It can be grown in all agro-climatic regions of Karnataka and is very well adapted to the plains (bayaluseeme).

Shri. Shrenika Raju 38 , is from Chinnikate village, Byadagi taluk. He grows Gandhashale variety on his 2 acre farm, harvesting 32 bags, of which 3 are retained for home consumption.

Some other farmers growing this variety are from Kashimbi, Nidinegilu, of Haveri district, Balekoppa and Chakkodabailu, of Shimoga districts, Siddanhundi, Madarahalli, and Hunusur of Mysore district.

(Source : Brochure and tele communication with OIP)

IMRAN KHAN

Balayatrie Estate, Boikeri P.O., Madikeri, Karnataka. Cell: 9448247247, Email: imrankhanmys@gmail.com

Imran Khan, an electronic engineer by training but a naturalist at heart, started managing his father's farm 8 years ago. For the past three years he is experimenting with various methods of organic practices. Two acres of the farm have been setup with drip-irrigation which he plans to extend to the entire farm. He moved to farming because it has always been in his family. Prior to which, he worked with Wildlife First, a premier conservation organisation in Karnataka where he was exposed to the significance of conservation first hand.

His farm had begun to lose coffee, cardamom and pepper plants. To reestablish yields, he switched to organic methods. He follows Palekar's method which he happened to read about in the newspapers, followed it up by reading Palekar's books and taking a one-day training at Krishnappa's farm in Bannur, Mysore. He has kept three cows and uses the cowdung dissolved for two days and cow urine as inputs.

Arabica coffee that is expected to yield in 5 years is interplanted with bananas. Since arabica is known to tolerate shade more than the robusta variety, the banana inter crop helps to fetch an income till such time that the arabica begins to yield.

(Source: Communication with OIP)

Dr. M.N. RAMESH

Associate Professor of Forestry, P.Box No. 63, Prabath Estate, Kuttapost, Kodagu District, Kutta 571 250, Karnataka. Ph.: 08274 244412, Cell: 9448313001, Email: ramesmn@yahoo.co.in.

Dr. M.N. Ramesh is an associate professor at the College of Forestry, Ponnampet, Kodagu. He comes from a farming family and has been farming on 10 acres for the past 15 years. His farm is located at Badaga village and is tank irrigated. He switched to organic inputs 5 years ago before which he was practicing chemical farming for 10 years. Realization of the ill effects of chemical farming on soil, water, animals and humans made him switch to organic. He grows cocoa, coffee, coconut, ginger, pepper, avocado and pineapple. Organic farming practices involved are the application of only organic manure such as FYM, compost, vermicompost, timely irrigation, pruning and training, opening of trenches etc. He uses farmyard manure, compost and vermicompost prepared on farm. He keeps 10 cows, 5 bulls and 10 calves. The only difficulty he finds in this method is the paucity of labour.

(Source: Communication with OIP)

K.M. BELLIAPPA

Craigmore Estate, P.O. Box 10, Pollibetta, Kodagu - 571 215, Karnataka. Ph.: 08274 251341, Email: craigmoreorganics@gmail.com.

The 68 acre Craigmore Estate is located at Chenaanakote, Pollibetta. 58 acres of these lands is tank irrigated and 10 acres is rainfed. The Craigmore Estate is being managed by Pramila and Bharath, a mother and son team. They are farmers by lineage.

With the onset of chemical agriculture and in keeping with the trends of the times, they too switched to chemicals and practiced chemical farming for decades. However, 5 ½ years ago they decided to revert to organic farming methods out of awareness, concern and commitment to the local ecology. Pramila and Bharath practice biodynamic farming, vermicomposting and agnihotra homa. Dr. A. Thimmaiah introduced them to organic and bio-dynamic practices and late Shri. Vasant Paranjape played a key role in putting in place homa practices on the farm. Pramila's own background and knowledge of homeopathy convinced her that cosmic influences could be stimulated through both biodynamic and homa practices, to have a healing and energizing effect on all living forms in the area of practice. A few high energy points were identified on the farm for the practice of homa by Late Shri. Paranjape himself. At these sites, a small hut has been built using only natural on-farm materials. Agnihotra-Homa is practiced here.

Says Pramila, 'Homa is to be practiced at sunset and sunrise when the sun's energies are most potent. Homa is very easy. It takes 10 to 15 minutes twice a day. And on full moon days one can practice triambakam homa round the clock by many in turns. This has a highly healing effect not only on the farm and the land, but on every object and life form coming within its influence. There is a great sense of healing and unity felt. In South America and European countries people practice collective homa everywhere – on farms, in public places, community halls, homes, parks etc. Even Dr. Pathak, Chairman of National Horticultural Mission promotes the practice of homa. I began by practicing homa in the verandah and noticed that there was a profusion and outburst of flowering in the potted plants on the verandah. Almost without any effort, there was less disease and greater output. Even the ash is very potent. Insect bites if rubbed with the homa ash, heal immediately. The intake of homa ash ½ to one teaspoon in water in the morning and at night has a soothing and healing effect on the body. Micro flora and fauna are also energized. With homa there is positive mutation in insects and animals and for humans, there is a sense of peace, wellbeing and the feeling of being in tune with nature.'

Pramila and Bharath have also incorporated Biodynamic practices at Craigmore. Pramila received training in biodynamic farming from Peter Proctor and David Hogg. Prior to 2003, even though chemical sprays were used, alongside the use of compost, herbal and garlic extracts etc. were routine practice. Bharat adds, 'Biodynamic is good for vegetable cultivation, but for coffee it can be cumbersome, time consuming - especially because of the extent of acreage and paucity of labour. Being organic is tough for coffee planters even though, there was no noticeable drop in production after conversion. In our personal experience biodynamic and organic methods work well in small areas for vegetables, fruits, rice and annual crops. The conversion period stabilizes in a year or two.'

Pramila reveals that the cow is central to both homa and biodynamic practices and says that the cow horn is used in biodynamic practices since it is the site of high energy. The energies of the cow horn are directly linked to the multi compartment stomach of the cow and hence there is high microbial action in the cow dung and cow urine. A conducted tour of the estate takes you to coffee drying and processing areas. The coffee pulp effluent is directly led into a pond which is treated with yeast and jaggery mixture. The effluent ferments into a liquid of high microbial content which is then used for moistening the composting beds. This compost is applied to the plantation. The biodynamic shed has sunk-in CPP units, tanks and drums in which composts are prepared and drums filled with cow urine and Glyricidia left to ferment for preparing of foliar sprays and highly potentized bio inputs. Going around with the mother and son duo, one follows suit ever so naturally - digging into composting beds layered with dung and dipping into drums of cow urine foliar sprays in the making.

Bharat, a trained photographer is actively involved in the running of the farm for most part of the year. He stays in touch with his photography profession through long tours to distant lands taking pictures of ecological connect. These are promoted through solo exhibitions. He finds a ready clientele for his pictures in big business houses who buy his pictures for their interiors and for use as company promotional year calendars. He has managed very well to follow his family occupation of farming as well as pursue his love for photography.

(Source: Farm visit by OIP and OFAI Team)

Dr. C.G. KUSHALAPPA

Asha Kiran, Konanakatte, Dhanugala Post, Kodagu – 571 216, Karnataka. Ph.: 08274 242322, Cell: 9845098685, Email: kushalcg@gmail.com.

Dr. C.G. Kushalappa is a Professor at the College of Forestry, Ponnampet, Kodagu. The college offers an undergraduate, post graduate and doctoral programme in forestry studies. Dr. Kushalappa switched to organic methods 8 years ago after practicing chemical farming for 12 years. He was introduced to the practices of biodynamic farming by Dr. A. Thimmaiah. His 18 acre farm is located at Konanakatte where he grows rice, black pepper, ginger, coffee, coorg mandrains, sapota and vanilla. Liquid manure, CPP and biopesticides are prepared on farm, the base materials for which are sourced from 15 cows and 5 calves maintained in the farm. The farm's water requirements are met by rain and other irrigation sources. Dr. C.G. Kushalappa says that there are no major problems faced in his farming activities, however there is a need to ensure that this type of farming becomes economically more rewarding.

(Source: Communication with OIP)

DR. K. SHIVARAMU

Sr. Scientist, Indian Institute of Horticultural Research (IIHR), Extension-CHES, Chettalli, Kodagu – 571 248, Karnataka. Ph.: 08276 266635, Cell: 9449122953, Email: Keelarashiva@yahoo.co.in.

Between 2003-2006 Dr. Shivaramu was deputed as Professor of Entomology to a new college at Bhimrayanagudi, Shahapur, Gulbarga, affiliated to University of Agriculture Science, Dharwad.

Gulbarga is known for its cultivation of pigeon pea (tur dal), a staple pulse in a majority of Indian homes. The town was infested with numerous distributors of chemical pesticides and fertilisers. Of the 175 crore worth of pesticides and fertilisers sold in Karnataka, 75 crores worth was sold only in Gulbarga district.

According to Dr. Shivaramu, The problem with chemical fertilisers apart from its poisonous nature when applied in improper doses is that irrigation is mandatory at critical stages for a plant's growth. Gulbarga's command area of canal irrigation also brought in chemical practices associated with the green revolution. However the average farmer was noticeably exploited because of his innocence and ignorance. Pharmaceutical companies even today continue to market not only chemicals but also chemicals with expiry dates.

Says Dr. Shivaramu, 'Given this scenario people like us can only advocate preventive measures and promote natural practices to the extent possible.'

Dr. Shivaramu's personal interest and expertise is in the control of insect pests through biological interventions in their life cycle at specific stages of development.

(Source: Communication with OIP)

GOLDEN MIST PLANTATION

Galibedu Village, Dist. Kodagu, Madikeri - 571 201, Karnataka. Ph.: 08272 265629, Cell: 9480788192, Email: gmohp2000@yahoo.com, Web: www.golden-mist.net.

Ludwig of Golden Mist Plantation, a German, was trained in horticultural and floricultural practices for three years in Germany. His work there, for over 10 years, using high doses of fertilizers and pesticides made him turn towards India looking for eco-friendly answers to his dilemma of having to poison the soil in order to grow food and flowers. Between 1991 and 1995 he spent time at Auroville with their afforestation and water conservation programme. In 1995 Ludwig met the Goels of Mojo Plantation, visited Coorg and never looked back.

He is the caretaker of a 26 acre farm at Galibedu on which he has been farming organically for the past 14 years. The farm relies on a stream for its water requirement. He grows rice, pepper, coffee and tea. The tea is processed on farm at a micro scale level to make green tea. His search for a relatively easy method and way of farming organically led him to discover EM. Since then, he has been using EM successfully in all his farming practices. He also practices biodynamic farming. Says Ludwig, 'Things have changed since the time I came into organic farming 14 years ago. There is more knowledge. Information is readily available. The knowledge of popular and traditional Indian methods of farming is easily accessible and wholeheartedly shared. In short, the word has spread. Organic farming is taught in no school. One learns from fellow farmers. 28 years ago, when I was studying at the Institute of Plant Pathology at Bonn University, the entire curriculum was in support of chemical agriculture. The place had, even then, fantastic state of the art latest equipment for research and training. At first glance it came across as a great place for learning but hidden somewhere one would notice a small inconspicuous board stating that the project, equipment etc. was being sponsored by Bayer or some other chemical and pesticide company. Even educational institutions were in the pockets of the chemical industries. This has not changed even today. The scale of domination of industry in every aspect of ordinary life is intrusive and frightening.'

Ludwig's reason for turning organic was the amount of poison used in general practices of farming. What he finds most difficult to accept and deal with is the mentality of the food grower, the consumer, agri institutes, research bodies and the government. He follows EM technology, Kyusei nature farming and some BD preparations. He also uses composts and FYM and presently keeps 4 cows. Ludwig is the authorized distributor of EM for the district of Coorg. Golden Mist Plantation has two guest houses and offers homestay facilities.

(Source: Communication with OIP)

B.B. CHENGAPPA

Palthope Estate, Post Box 5, Kutta, Virajpet, South Kodagu – 571 250, Karnataka. Ph.: 08274 244222, Cell: 9448048873, Email: organic@palthope.com

The Palthope Estate was established in 1935 and ran on traditional practices for very many years till the influence of chemical agriculture came to the estates of Kodagu. The estate was farmed with chemical inputs until Chengappa the owner of the estate realized that the quantity and cost of input only kept rising to a point (with the drop of coffee prices internationally to the 30 year low) where the farm was beginning to go into red. They switched to organic methods in 1997, choosing natural methods of composting, recycling of farm waste and application of EM etc. Slowly the benefits of organic methods turned in favour of the Palthope Estate and ever since yields have increased.

'Flavor of India' title won by the estate's excellent quality of coffee, and being labeled as the most preferred Robusta coffee in the world by international coffee reviews was a turning point for Palthope. From then on, says Chengappa, it has been a success story all the way.

The 23 acre farm is located at Kutta in Virajpet. Chengappa has been engaged in farming for the past 25 years of which 13 were spent in chemical agriculture and in trying to grapple with unsustainable practices. The estate grows paddy, clove, nutmeg, pepper, cardamom, oranges, sapota and coffee. They keep cows, goat and chicken.

The only hitch that provides scope for further improvement in Chengappa's opinion is in the area of marketing the farm produce.

(Source: Communication with OIP)

ORGANIC FOOD CLUB

203, Shukrawar Peth, Tilakwadi, Belgaum – 590 006, Karnataka. Phone: 0831 2465027, M: 9900775633, Email: homafarming@rediffmail.com

(Contact person: Abhay Mutalik Desai)

Organic Food Club (OFC) is a voluntary, service oriented organization. It identifies and promotes the produce of organic farmers from northern Karnataka who are growing vegetables, pulses, fruits, cereals and other plant products without the use of chemical fertilizers or chemical pesticides at any stage of cultivation.

Its motto is to establish a fair marketing system, with a direct relationship between the producers and the consumers. It strives to make this connection without using any mesmerizing advertise-ment or exaggerated claims. It educates the consumer about the real quality of food products rather than their appearances. Its activities also include creating awareness among the public about the dangers of chemicals used in agriculture.

At present the OFC is able to fulfill only a small percent of the demand. This is because of the gap that exists between the organic producers and the consumers. Only when the consumer realizes the advantages of chemical free products, and there is a good demand for it, can farmers grow solely by organic methods and fully meet the requirements. OFC tries to bridge this gap and provide a platform for both.

OFC members also offer expert advice to farmers who wish to convert to organic farming and offers support through periodic visits during the make over period.

Mr. Ashok Tubachi, the chairman of the club adds, 'The Organic Food Club now collectively has a total of 107 acres of certified land that belongs to its various members. The certification has been conducted by Control Union Certification, head office at Mumbai which is an IFOAM, APEDA accredited body. The certification has helped us greatly to explore export possibilities. We now export our products like jaggery, brown sugar (jaggery in powdered form) and jaggery syrup (kakvi) through exporters in Hyderabad and Mumbai. The club's produce include sugarcane, Paddy (local aromatic Basmati variety), cotton, ground nut, soya bean etc. We have had to reorient our vegetable growing because of flooding of farms during the past couple of seasons. All organic fertilisers and bio pesticides (vanaspathi extracts) are prepared at these farms itself.'

'The Government of Karnataka has recently (2008) earmarked Rs. 100 crores for promotion of Organic farming in Karnataka. The Jaivik Krishi Society which is operated from within the Lal Bagh (Bangalore) premises promotes the sale of organic farm products and Bangalore alone presently has 230 outlets. The "Organic Farming Mission," set up by the Govt, has joint representation from organic farmers and govt. officials from every district in the state. It is advisory in capacity and also runs 2 day workshops for farmers free of cost. The Workshop is divided into eight modules that cover all aspects of Organic Farming from "Maathi(soil) to Market."'

Two of their club members Shri Suresh Desai (featured elsewhere in the book) and Shri Abhay Mutalik Desai were honoured by the state as 'Krishi Pandit' in 2005-2006. Shri Ashok Tubachi received the same award in 2006-2007. He is presently on the Board as one of the directors of "Organic Farming Mission" of the state.

'The best benefit has come from working collectively as a group with a common mission of providing poison free food!' proudly claims the club's Chairman, and adds, 'any one is free to contact us for information and free training.'

Contact details of some members of the organic food club (all organic farmers):

1. Shri A.B. Tubachi Yamakanmardi - Cell: 09448126953 Chairman of the club

2. Shri Shailesh Joshi of Hattargi - Tel: 08333-276309 Cell: 09449108543

3. Shri Abhay Mutalik Desai of Sutagatti (Belgaum) - Tel: 0831-2465027 Cell: 09900775633

4. Shri Prakash Utturi of Hattargi - Tel: 08333-276252 Cell: 09008124333

5. Shri Suresh Desai, Tel: 08338-261052 Cell: 09480448256

Members of organic food club have been acknowledged as resource persons by many institutions. They may be contacted directly.

Shri Abhay Mutalikdesai and Shri Suresh Desai have been acknowledged as resource persons in organic farming by :

- University of Agricultural Sciences Dharwar.
- K.L.E. School of Agriculture Belgaum
- Konkan Mango Growers Association Malvan/Ratnagiri, Maharashtra
- Doodh Ganga Co-op Sugars Chikodi, Gokak Power Distilleries and Sugars, Warana, RAjaram, Krishana Sugar Factories Maharashtra
- Vigyanan Bhavan Delhi
- IIT Delhi
- UNDP
- Karnataka Pradesh Krishak Samaj
- Karnataka Vikas Bank Dharwar
- Rotary & Lions Club Belgaum
- Organic Farming – Govt. of Karnataka
- National Horticultural Mission
- Jaivek Krishik Society – Lal Bag Bangalore

(Source: Communication and Tele-interview with OIP)

JAIVIK KRISHIK SOCIETY (JKS)

Nurseryemen Co-operative Society Premises, Lalbagh (Double Road Entrance), Bangalore – 560 004, Karnataka. Ph: 080 65624197, email: jk_society@rediffmail.com

Contact: Executive Officer, Jaivik Krishik Society

JKS is a federation of organic farmers and farmer groups set up to promote fare trade practices in organic farming. It was set up to cater to the needs of organic farms in Karnataka through intervention on production, quality control, group certification, value addition and marketing. It has been authorized by the government of Karnataka to perform duties of promoting organic farming in the state. Some of its activities are creating local growers group, capacity building in organic production, certification, value addition and processing of organic products and outreach programmes.

Most organic farmers of Karnataka find the network and marketing support offered by JKS very useful. Recently, it has received much support from the Govt. of Karnataka and an organic mall has been started by the society at the above address. This may be the first ever organic shopping mall in the country.

(Source: Brochure)

A.R. VIJAYKUMAR

613/1, Shri. Venkateshwara, Nilaya, K.T.J. Nagar, 15th cross. III main, Davanagere- 577002, Karnataka. Cell: 09448944506.

(Source: Visiting card)

NALANDA INTERNATIONAL INSTITUTE

4102A, Galaxia, Diamond Hill, Kowloon, Hong Kong. Ph.: 852 8108 1289, Cell: 91385538/9731503897, Fax: 83445212, Email: Mondi.Ng@nalandaii.com, Mondi.ng@gmail.com, Web: www.nalandaii.org.

India Office: P.O. Bylakuppe, Mysore District 571 104, Karnataka. Ph.: 8223 252919, Fax: 8223 253733.

Contact: Mondi J M Ng, Coordinator for the organic farming programmes at the Bylakuppe Tibetan Settlement.

ACADEMY OF NATURAL FARMING

Farm: Doddinduvadi, Kollegal Taluk, Chamarajanagar Dist. – 571 443, Karnataka.

Office: No. 10, 8th Block, Adhishakthi Road, Shakthinagar, Mysore – 570 0-19, Karnataka. Cell: 9880185757/9845125808, Email: Kailashnatufarm@gmail.com Web: www.the-anf.org

Contact: M.K. Kailashmurthy, Natural Farmer, for details of the academy's activities.

ODEKAR FARMS & ODEKAR FOUNDATION FOR RURAL DEVELOPMENT (OFFRD)

Nandhihalli, Kabbigere Post, Via, Thovinakere - 572 138, Tumkur District, Karnataka. Ph.: 08138-239029

Contact: K.R. Neelakanta Murthy

(Source: Visiting Cards)

FRANCIS XAVIER A.

No. 5, Muniga Layout, M.S. Nagar, Bangalore - 560 033, Karnataka. Ph.: 080-5468418, Email: francisxa@indiatimes.com

Work area: Organic farming, eco-sensitisation programmes, biodiversity conservation, sustainable life styles, counseling.

(Source: Visiting Cards)

PROF. G.K. VEERESH

'Srinidhi,' No. 239, IV Main, Ganganagar, Bangalore - 560 032, Karnataka. Ph.: 080 3332482/3546060/3410754, Email: gkveeresh@indiatimes.com

Former Vice-Chancellor, University of Agriculture Sciences, Bangalore

Founder President:
Association for Promotion of Organic Farming (APOF)
U.A.S. Alumni Association, Bangalore
IUSSI –Indian Chapter
Arboriculture Association of India (AAI)

(Source: Visiting Card)

MAGOSAN EXPORTS PVT. LTD

157, Kukkujadka Post, Sullia Taluka -574 212, Karnataka. Ph: 08257-284228, Cell: 09449167728, Email: magosan87@yahoo.co.uk

Ctc: M.G. Sathyanarayana, Managing Director

KEDAR ENTERPRISES

1st Floor, Vijaya Bank, Bagalkot - 587 101, Karnataka. Ph.: 08354-220640/220527/228218

Cell: 9448126348/9845520087

Contact: M.C. Jigalur, honey bee keeper. The honey is tested by C.F.T.R.I. Mysore & BEC step Bagalkot

(Source: Visiting Card)

International Competence Centre for Organic Agriculture (ICCOA)

951 C, 15th Cross, 8th Main, Ideal Homes Township, Rajarajeshwari Nagar, Bangalore - 560 098, Karnataka. Ph: 080-65682830, 28601183, Fax: 080-2860 0935, Email: info@iccoa.org, Web: www.iccoa.org / www.indiaorganic2006.com

ICCOA is a knowledge and learning centre for organic agriculture with a mission to help build the competence of individuals and organisations of the South Asian region in organic agriculture, and therefore, contributing towards building ecologically, economically and socially sustainable agricultural systems. Set up as a non - governmental interface organisation, ICCOA has a wide mandate to serve all stakeholders of organic agriculture. ICCOA General Assembly sets the directions and strategies as well as elects the Board of Directors. Its operations are managed by a team of professionals led by the Executive Director.

ICCOA's objectives are:

To advocate and popularise organic agriculture;

– To collect, document and disseminate knowledge and information;

– To train human resources for building institutional capacities in organic agriculture;

– To provide consultancy services in the areas of R&D in organic agriculture.

ICCOA serves by:

– Undertaking studies and research on organic agriculture;

– Providing a platform to stakeholders of organic agriculture;

– Providing organic farmers, entrepreneurs, NGOs and Govt agencies access to technical information;

– Facilitating institutional strengthening of public and private organisation and agencies to enable them promote organic agriculture within their respective mandates;

– Facilitating trade and marketing of organic products and inputs;

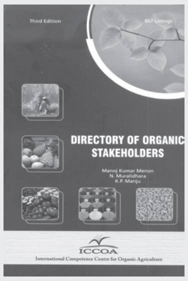
– Facilitating setting up of internal control systems.

Membership of ICCOA is open to all individuals and organizations involved in organic agriculture. Members enjoy several privileges, such as free newsletter and reduced fees for programs & fairs organized by ICCOA. Details are available on their website or write for membership application form.

ICCOA whole meal project

ICCOA is working on a unique project whereby nearly 90 certified organic food items of daily meals of are grown within the vicinity of the urban consumer centre and are available at organic retail outlets. One such project is nearing completion near Bangalore and other projects may be taken up on demand.

Directory of Organic Stakeholders



By ICCOA

Rs. 400

The Organic Directory is a great source of information for people who grow/buy/sell organic produces, products and/or services. It can help in finding the best of all things organic in India & worldwide. The directory lists organic stakeholders including farmers, input manufacturers, processors, buyers, retail outlets, restaurants, bakeries, wholesalers, personal care products, certification agencies and much more!

For more details, pl. see http://www.iccoa.org/directory_details.asp.

S. ANAND & V.K. ARUNA KUMARA

'Chitrachoota' 14, II Block, I Stage, Vinobhanagar, Shimoga City – 577 201, Karnataka.

He is a member of organic farming cell.

(Source: D.D.Bharamagoudra)

DR UPENDRA SHENOY

Keshav Shilpa, Kempegowda Nagar, Bangalore — 560 019, Karnataka.

(Source: D.D.Bharamagoudra)

BASANAGOUDA S. PATIL

Ward No. 4, At Post Yettinahalli, Shirahatti Taluka, Dharwad District, Karnataka. 582120 Ph.: 08487- 279088 Cell:09448981683

(Source: D.D. Bharamagoudra)

DEPARTMENT OF ENVIRONMENTAL SCIENCE

Bangalore University, J.B. Campus, Bangalore – 560 056, Karnataka. Ph.: 080 22961367(O)/23217963(R), Cell: 9880839109, Email: nandini.sai@rediffmail.com, Web: www.envsciencebu.com

No. R-7, Bangalore University Quarter's, Opp. B.U. Swimming Pool, J.B. Campus, Bangalore – 560 056, Karnataka.

Contact Capt. Dr. Nandini. N, Reader and Principle Investigator, for advice on Natural Farming and Sustainable Agriculture. She is centrally involved with the Academy of Natural Frming.

KODAGU MODEL FOREST TRUST (R)

College of Forestry Campus, Kodagu District, Ponnampet – 571 216, Karnataka. Ph.: 08274 249370, Email: dipnmpt@sancharnet.in.

The trust works on farm-forestry issues specific to the farming patterns of Kodagu vis – a - vis the rain forests of Kodau.

VAST CENTRE

Adyanadka – 574 260, D.K., Karnataka. Ph.: 08255 270254, Fax: 270686, Email: info@varanashi.com, Web: www.varanashi.com.

Conducts research and trainings on composting and also has a farm with functioning alternative energy working models in place.

KARNATAKA– PGS FARMER GROUPS

SREE

Group of 10 farmers with 23 acres under organic cultivation. They grow tomato, banana and chickoo.

Convener: Rajesh, Vil. Doddamachenahalli, Post.Kommaralu, Vartur Hobli, Bangalore East, Karnataka. Ph.: 080 28441299

SAMRUDDHI

Group of 8 farmers with 17 acres under organic cultivation. They grow capsicum, tomato, chilli and jowar.

Convener: Mr. Muninanjappa, Vil. Chamenahalli, Post. Kommaralu, Vartur Hobli, Bangalore East, Karnataka.Cell: 09242888020.

MUNISWAMY

Group of 11 farmers with 12 acres under organic cultivation. They grow ragi, paddy and mango.

Convener: Mr. Manjunath, Vil. Sulikoti, Post. Kommaralu, Vartur Hobli, Bangalore East, Karnataka.Cell: 09887132201

MARAMMA

Group of 15 farmers with12 acres under organic cultivation. They grow ragi, paddy and grains.

Convener: Mrs. Muniyamma, Vil.Muddenahalli, Post. Kommralu, Tal. Domalur, Bangalore South, Karnataka.Cell: 09980844622

NARAYANA SWAMY

Group of 13 farmers with 25 acres under organic cultivation. They grow tomato, paddy and mango.

Convener: Mr. Ashwath Narayan, Vil. Vijiyapura, Tal. Devanahalli, Bangalore rural District, Karnataka. Cell: 09880079717

ORGANIC CERTIFICATION IN KARNATAKA FOLLOWING THE PARTICIPATORY GUARANTEE SYSTEM (PGS)

Karnataka has 57 organic farmers registered through 5 farmers' local groups. IIRD, the PGS Organic Facilitation Council works through Janodaya Trust to facilitate this process.

Details of these local groups and their organic produce is posted at the www.pgsorganic.in

South India

Kerala

Interview: K V Deyal

Inspired by Prof. John C Jacob, a veteran of the environmental struggle in Kerala, Deyal grew into his current avatar of promoter of Organic Farming Practices. Conducting workshops, farm visits and trainings, practicing naturopathy are all part of a days work for Deyal.

Deyal is one of the founders of the Kerala Jaiva Karshaka Samity, founded expressly for the progress and propagation of organic farming in Kerala and a founder member of Vembanad Eco Club, that takes environment and sustainability education to students, youth groups and the community at large.

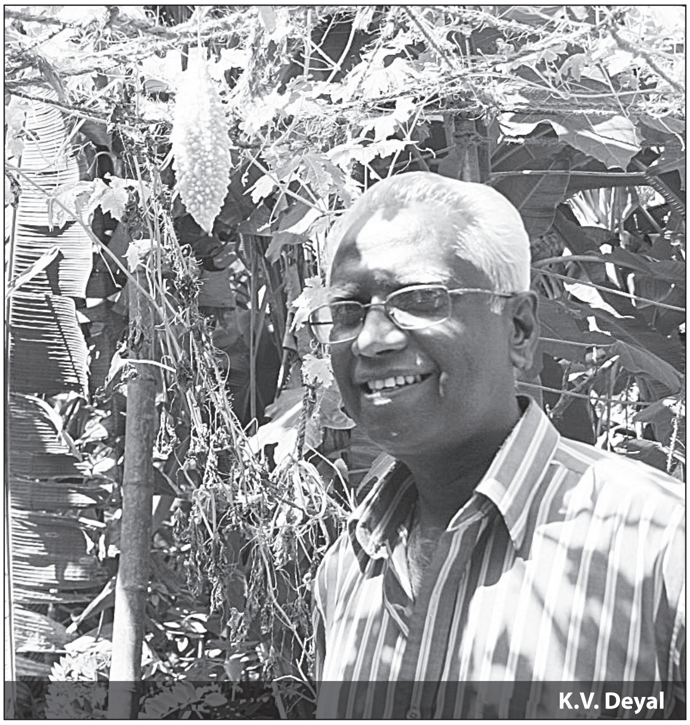
Deyal an organic practitioner and convincing speaker has inspired many farmers to change over to organic farming and a natural way of living. His modus operandi of taking the message forward simply stated is, 'For something to go into the soil it has to first go into the mind of the farmer first.'

Claude Alvares: You have been associated with organic farming in Kerala since 1992 and perhaps even earlier. What is the difference that you see regarding knowledge and awareness of organic farming in Kerala between that time and now? Has there been slow growth or large-scale growth in Kerala?

K V Deyal: In Kerala the situation is vastly different today from what it was some two decades ago. I have been associated with organic farming since 1986. At that time nobody would even listen to me. Now people want to know more and more but there are no proper facilities for learning. They even come to my house and forcibly stay even if there is no room. We are getting wonderful results. Wherever I go to take a class, on that day itself two more classes will be organized because people are really convinced about the need for organic farming.

There have been many changes. That is why the Government is talking about organic farming and everybody is interested in it. Generally people do not attend government meetings unless a subsidy is being given. However, if we call a meeting, you will find a minimum of around 30 people attending it. First they will argue about it and then they will agree to try it. If we can present the ideologies and principles in a better way than we presently do, and if we can maintain a model farm, then more than 80% of the people will be converted.

But there is one problem, income has to be considered. In Kerala, coconuts face a very difficult situation because the trees are totally destroyed. Even now we cannot find a correct solution to that and so there is a lot of anxiety. There are problems with other kinds of crops as well. The states average yield has now dropped to 30 coconuts /tree /annum.


K.V. Deyal

Only systematic research into such problems can improve the situation. We have started a research centre but have not done much work. In Kerala we are talking too much but doing very little with regard to the soil. In Tamil Nadu on the other hand, they are doing much work with the soil and the people are farming as a part of their lives. In Kerala, people who depend 100% on farming are very rare and hard to locate.

Agriculture is facing a problem. So we have to put forward living solutions. If we can give complete guidelines for running a farm the organic way, definitely people will be interested. They expect definite answers to their questions and solutions to their problems. People are asking very serious questions and we are not able to provide all answers.

However, there is a positive side also. If people are convinced, and they have the financial capacity, they are prepared to do start fully organic farming. If they are dependent fully on farming, the change over is in part. That is the methodology we are adopting and it is acceptable. This method is working in Kerala.

Our problem is that some research should be started. Training we can give. We have even conducted 2 training programmes for adivasis. The result was remarkable. After the 3-day training programme, we visited their farm lands a month later and found a wonderful situation. They have done remarkably better than the local people. We are very satisfied with them. They have done far better than expected.

CA: Besides coconuts, what are the other problems that organic farming needs to provide a solution for?

KVD: The soil condition is very poor. Then there is the problem of pest control. There is a red weevil that is very difficult to control. Even a healthy 400-coconut yielding tree can be totally destroyed. Hundred years of the coconut research establishment in Kerala has not been able to solve such problems.

Within my limitations, I have been trying to research on this, and I think I have managed to identify the problem and the solution. It will however take a year or more to standardise the results so as to be able to make a categorical statement.

CA: But even chemical farming cannot solve that problem. If organic farming can solve it, it will convince a lot of people.

KVD: I believe it can be solved. I have taken soil from our island of natural growing trees and tested it in the laboratory. I have found that the pH is 8% in Lakshadweep island. If we can keep the pH to about 7% I think we can control these pests. The pest has always been here. The toddy-tapping trees have attracted these pests 30-40 years ago and that pest has been around since then. It had not attacked other trees. Only toddy-tapping trees were affected. But now all the trees have been affected with this problem. I think it is the toddy that is causing the problem – the calcium and the pH in the toddy. If we can maintain that I think it will help to solve the problem. People use lime to control the weevil pest. If you use lime, there is a high fluctuation in the soil. That has to be avoided since all the organic matter will be destroyed. Instead shells must be powdered without burning or roasting them and applied to the coconut trees. Almost all the borer pests can be managed by controlling the pH in any crop. The process will be slow as the absorption will be gradual. But it will be a uniform supply, for a longer time. The coast will also benefit since all the soil in Kerala have calcium deficiency. Shells are easily available – it is waste material and we can get them very easily. This is a solution which will not affect the organisms in the soil.

The other thing is that all the organic matter has to be chopped into half a centimeter size, then put in water with cow dung and stored in any place. After some time it can be used as compostible material. In a machine, any organic material can be crushed, chopped and then put in water with cow dung. If urine is available or EM, that too can be used. It should be mixed, stored and used after half or one month.

If we can introduce these two methods, there will be a big jump in organic farming. However before we can confidently offer these as solutions we have to test them by application and confirmatory tests– only then propagate techniques.

Also a small shredding machine has to be designed which will crush and then chop the organic material. The presently available machines just beat the material to a fibre. But it should be crushed and chopped to fine pieces. This takes care of the bacterial action and helps composting. It has to be used once a week only. If there is a common machine it can be given on rent to the farmers on rotation. It can be run on diesel or electricity or both. A farmer fabricated one such machine on my request at a cost of Rs. 27,000, but it did not meet our requirements. It must first directly crush and then cut. Even if it is a heavy machine with diesel engine attached, it would be good. If slurry is made of the cut pieces and cowdung the composting will be quicker and it will be ready in 15-20 days.

These are a few things that we can do to begin with and over time more individuals would move towards organic farming when they see clear easy solutions and the accompanying monitory returns.

CA: On your own farm you have adapted various practices. What do you consider an ideal combination?

KVD: I am experimenting on farming based on ecological and sustainable principles and have tried to create a self balancing and self sustaining micro farm-ecosystem. I believe, a farm should have a hillock downstream of which should be a water collecting body. An open space with direct access to the sun is an essential. 10% of the farm should ideally be dedicated to reconstructing a natural eco system like a sacred grove. This patch has maximum diversity of over 150 species. Ideally a farm should be not exposed to direct sunlight, wind or water. The rationale for a grove being, it attracts diverse bird life and predator species which act as natural bio-controls. An owl has also taken permanent residence on the light holder in the guest room of my home on the farm.

K.V. Deyal on the late Prof. John C Jacob

I met Prof. Johney in 1985, at a Nature Education Camp conducted by him in the forest, for school students. He was head of the Zoology department in the Payyannur College, in Kannur , actively promoting Environmental Education since1972. He is the man, who started Environmental Education in Kerala. In the college he had initiated a Zoological club and was regularly publishing a newsletter 'Myna.' This is the beginning of the Environmental History of Kerala. In 1981, he started an organization by the name of 'SEEK' (Society for Environmental Education in Kerala) and began to publish a magazine 'Soocheemukhi.' This was the first organization and Environmental Education Magazine in Kerala. The magazine and SEEK after 27 years are still active and doing well. Co-operating with WWF-India, he continued conducting regular nature education camps in the forests, sea shores, river sides and lake shores for children and others. He led the silent valley agitation to its victory.

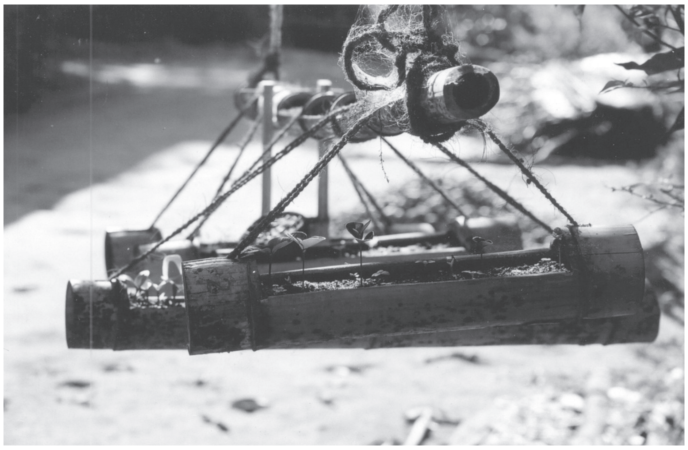
In 1985 he left SEEK and started another organization namely, OEOL (One Earth One Life) and a new magazine 'Ankh.' In 1992 under the leadership of Prof. Johney an organic farming movement started in Kerala, 'Kerala Jaiva Karshaka Samithi.' This is the first organic farming association in Kerala, through which we continue to work.

In 1995 he left OEOL and started another organization 'Prathishthanam' and a magazine 'Prasadam,' centered on eco-spirituality. He has written several books and till his death in 2008, he lived for nature and its protection.

CA: What do you think is the need of the hour for agriculture in Kerala today?

KVK: The soil in Kerala has depleted to such a great degree that the only solution is to rebuild the soil through biological farming techniques. Presently the farms receive heavy rains for 6 months and the rest of the six months they are over irrigated. As a result, the soil structure and nutrient value has depleted. The only good fertile area left is at the mouth of the rivers because of heavy sedimentation. Our outreach and education programmes through all fora must be strengthened and reestablished.

We also need serious research for standardisation of possible solutions that are location and crop specific. I have a basic idea of what needs to be done but this has to be substantiated by scientific techniques so that standardised practices can then be popularised.



Kerala organic farmers are famous for using biodegradeable containers for raising plants

Organic Farms

K V Deyal

Sreekovil, Kayippuram, Muhamma P.O. Alappuzha District – 688 525, Kerala. Phone: 0478-2583289

Deyal practises a unique method of farming based on a blend of principles associated with natural, ecological, organic, permaculture and local traditions. The farm plots are designed in a pattern with maximum diversity, the coconut being the dominant crop. There is an attempt to emulate a rainforest with a view to making it a self sustaining system.

Deyal and wife Jayta live in the middle of their small farm which is also home to a resident barn owl that lives perched on the lamp holder in the guest bathroom, bearing witness to the toiletry rituals of visiting guests without batting an eye.

Deyal's farm is an agro-ecologist's paradise – every bit of organic kitchen and farm waste is recycled within the farm which itself has been designed on the principles of a complete ecosystem. Almost all local indigenous plant species are seen growing in a multilayered canopy. The diversity in terms of wild and fruit bearing trees, vegetables, tubers, green fences, flowering, medicinal and aromatic plants is a naturalist's delight. The visiting and resident birds, bees, butterflies, insects, chipmunks, snakes... are a given. A little pond for growing water plants that are regularly harvested for mulch is at the centre of the farm. It is designed and crafted alongside a small terraced mound with trees - the two in combination serving as a collection body for harvested rainwater and a windbreak to curtail soil erosion.

Kerala Organic Farmers Association (KOFA)

Kerala Organic Farmers Association (Kerala Jaiva Karshaka Samithi) was formed on 4th December 1992. Prof. John C. Jacob (Founder President of OEOL) took the initiative to organise a two day meeting at Naas Auditorium, Kalady. The agenda was to discuss and find a solution to the mounting environmental problems in Kerala vis-a-vis chemical farming. The local Prakruthi Jeevana Samithi hosted the meeting and the expenses were met by the Nature Fraternity Movement of Melanadu Development Society (MDS) Kanjirapplly, Kottayam. The meeting was inaugurated by Shri. C.R.R. Varma, the promoter of 'Natural Living.' More than 40 delegates from all over Kerala from various professional backgrounds (Doctors, Engineers, Government servants, teachers, social workers, farmers, professors and other personalities) participated in the meeting. Kerala Jaiva Karshaka Samithi was a created at the end of this intense participatory meeting.

Each year in the month of May, the Samithi organizes a 3 day state level meeting that is looked forward to and attended by close to 200 people. The main events are lectures by experts, information dissemination, networking and exchange of local seeds. KOFA has a President and Secretary who serve a two year term. All members are selected in rotation to hold official positions. There have been 16 annual gatherings of this nature so far. The state level meeting then splits into respective district level working committees that carry out activities at respective local levels. At the local level the nature and intensity of work is dependent on the local farmers' interest, ability and capacity.

Jaiva Karshaka Samithi conducts need based organic farming training programmes for farmers. Its centre located at Thrissur is managed by Dr. Elizabeth Joseph. This Training Centre has 2 ½ acres land with lodging and boarding facility for 35 trainees. The 3 day training includes first hand practical lessons. In a year four trainings are conducted of which one is meant for school children and is free of cost.

Today the farms of several members' have become model farms. Visitors are always welcomed and knowledge is freely shared. About 180 members of Kerala Jaiva Karshaka Samithi are seriously involved in organic farming.

(Source: K.V. Deyal)

There is also a large open spacious outdoor facility for conducting eco-awareness and organic farming classes for school children, farmers and the public.

In many ways their time is not their own. Deyal is always called away to deliver talks, conduct workshops, give expert advice on pest management, soil nutrient enhancement, and to visit farms. He provides naturopathy counsel and medication every Monday, while Jayta plays the role of hostess and personal secretary with much grace and ease. Radhakrishnan as buddy and co-trainer completes the trio. The two, together with the organization, have been significant contributors to the enhanced environmental awareness and the organic farming movement in the state.

SUMAN, JALAJA & NITHYANANDA

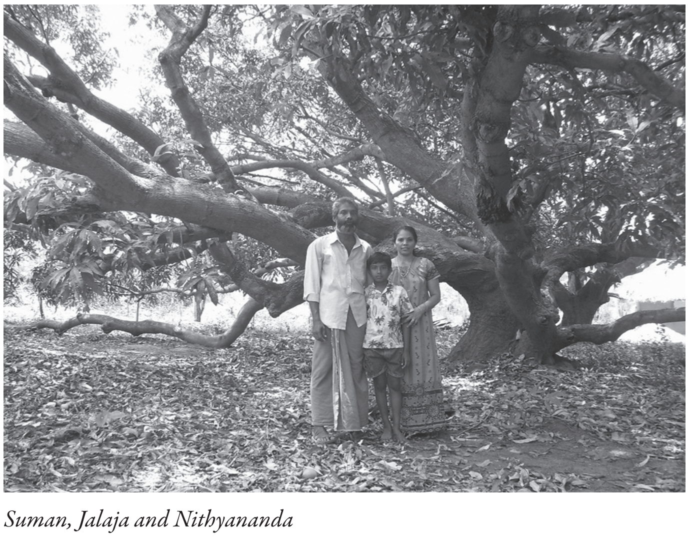
Anuragam Organic farm, Mechira, Muthalamada, Palakkad district - 678 581, Kerala. Ph.: 04923 275439, Email: sradhaa@rediffmail.com, Sradhaa@yahoo.co.in, Web: www.myspace.com/sradharetreat, www.kumbham.in/organicfarming.html.

Contact person: K.B. Suman

'Our farm falls in the Palakkad gap in the foothills of Nelliampathy hills. It grows crops like paddy, mangoes, coconut, nutmeg, gooseberry, groundnut etc. As this is a rain shadow area special care was given to water harvesting. Being influenced by natural farming concepts the first few years were spent in planting different varieties of trees and mulching. Finding it difficult to carry on and two snake bites later, the farm was redesigned on permaculture lines.'

'As there was a pattern for planting trees and mulching and space to wander in between, it appeared to be more convenient. Different preparations of biodynamic inputs, panchagavya, EM etc. were incorporated. But when systems take over our original intention is often forgotten and to get back is really tedious. When we go after filling the gaps of the designs we will find ourselves in midst of plants and crops we never wanted to grow and with no room for what we wanted.

'Slogans like "make forest your model," and "tap all the solar energy" can often mislead. We will find ourselves in a shady wood but without fruits. The advice has been to grow everything close and chop it after you select the plant you need. But a tree which has grown tall in competition and a tree grown in sufficient sunlight and wind are entirely different. We now depend on common sense, proceed by understanding the needs of the plants, climatic conditions and adapting just minimum processes from different systems.



Suman, Jalaja and Nithyananda

'In the ambiance of the farm we have provided a space for visitors or volunteers to take part in the activity here. There is a craft center mainly pottery just adjacent to the farm were visitors are allowed to participate. The center 'Sradha' is intended as a place for silence and physical work (www.myspace.com/sradharetreat').

Suman acquired knowledge of organic farming practices such as preserving the produce, processing seeds and controlling pests from old farmers as well as from expert organic farmers. He uses only whatever he thinks will suit the particular area where he lives. For example, to treat paddy seed, it is kept outside in the sun for one day and one night in moonlight. The next day, the grain is warmed again by the sun and then stored in sacks. This is called 'Mampoo kollikkal' and it is done in the months of 'Makaram'(December – January).

SRADHA

Sradha is a retreat centre located near Chulliar dam. It is a place for silence, inner exploration and physical work, where one lives in communion with the ecology of the hilly terrain, organic farming, nature cure, and spirituality. The retreat centre is set in the ambience of an organic farm 'Anuragam'.

People are encouraged to visit and stay for short or long periods. Accommodation is limited to four people at a time on shared basis. Toxin free food and herbal drinks, produced mostly from on farm produce are served. A small library with books and audiovisuals is available.

Expenses for accommodation and food have to be borne by the visitors. One day camps for around 30 persons can be held. Students / visitors are exposed to alternatives in education, traditional crafts, medicine, agriculture etc.

The farm, the surrounding hills and the small waterfall close by, enthuse many a nature lover and attract many peace seekers.

(Source: Communication with OIP)

K. BASHEER

Sujeevanam, Ederam, Payyamedam P.O., Pallakad District – 678 583, Kerala. Ph.: 04924 231269, Email: happyamal@rediffmail.com

He is an organic farmer very actively promoting organic agriculture. He conducts classes for farmers on organic farming practices.

(Source: K V Deyal)

DR. PAUL NEELAMKAVIL

'USHUS' Peramangalam P.O., Trichur – 680 545, Kerala. Ph.: 0487 2308118, Cell: 09447408847, Email: paulneelamkavil@yahoo.com

Dr. Paul Neelamkavil Is the president of 'One Earth One Life'. A medical doctor, he practices organic farming on his farm every day. 'One Earth One Life' magazine was started by

Prof. John C. Jacob and presently is being lead by Dr. Paul. In spite of being a medical doctor he takes classes for promoting organic farming and his basic theory is that every farm is a potential training and learning space. (Source: K V Deyal)

PEEKAY TREE CROPS DEVELOPMENT FOUNDATION

President, Peekay Tree Crops Development Foundation, MIG-141, Gandhi Nagar, Kochi-682 020, Kerala. Ph.: 0484-2204271, Cell: 09388602105, Email: pkthampan@yahoo.com

Contact: P.K.Thampan

The Peekay Tree Crops Development Foundation is promoting tree-based farming systems through publications, seminars, consultations etc. The major tree crop is coconut palm. Multispecies cropping as well as mixed farming below coconut are the thrust areas. Vermicomposting is being popularized in home gardens. Integrated rural development is another area of activity. The NGO is presently implementing projects sponsored by well known funding agencies.

Mr. Thampan is a retired professor. He conducts outreach and training programmes through the foundation.

(Source: Communication with OIP)

SUJITH KUMAR C.K

10/309, Perinchery Post, Thrissur – 680 306, Kerala. Ph.: 0487 2351689, Email: cedar_india@yahoo.co.in

Sujith Kumar has written a few books on organic farming in Malayalam and visited many farms to document their stories. He publishes an organic farming newsletter called ‘Krishi Malayalam’.

(Source: Communication with OIP)

TOMMY VADAKKANCHERI AND ELSY

‘Vadakkancheri’ Marappanmoola, Pulppalli P.O., Wayanad District – 673 579, Kerala. Ph.: 04936 241493, Cell: 09447952055

Tomy Vadakkancheri was born in a farmer’s family. They had years of experience in cultivating pepper, coffee, and the other plantation crops. When a disease named ‘druthavaattom’ (quick wilt) affected the pepper all over Wayanad, Tomy realised the uselessness of chemicals. The agriculture universities and experts made so many enquiries, researches and experiments, which gave no fruit. From the next season onwards, Tommy stopped using pesticides and chemicals. Thus he came to know about the deceitful side of the so-called agricultural experts. He was the first one to become an organic farmer in this region. Later some more people joined him in deserting chemical farming and they jointly formed a society. But now he is not so satisfied about the association and has quit it already.

His farm is a kind of forest with tall trees and the crops in between. Pepper, coffee and plantain grow in robust health here.

Apart from farming, he has some more enterprises. One is a mill where he de-husks paddy into rice for sale. Elsy, his wife is in charge of the enterprise. There is a big traditional boiler there and with two helpers, she manages it well. Tomy also takes neem seeds from other states and make them into powder and sells it as organic growth promoter. He has two shops that sell organic produce and handicrafts. One at Pulppally and the other is at Batheri.

Tomy is the president of Highland Organic Farmers Cooperative Society (HICOS)

(Source: Tomy Mathew)

THAMPI. M. THOMAS AND LEELA.K.M

‘Mattathumanal’ Veliyambam P.O. Wayanad District – 673 579, Kerala. Ph.: 04936 241075, Cell: 09447478744

Thampi and Leela are organic farmers. They grow pepper, rubber, ginger etc.

(Source: Tomy Mathew)

BABY JOSEPH AND TRESYA

‘Thundthil’, Veliyambam P.O., Marappanmoola, Pulppally, Wayanad District – 673 579, Kerala. Ph.: 04936 240673

Baby is from a farmer’s family. His sole income is from farming. His wife helps him with the farm work. They grow multiple crops, keep dairy and sheep.

Their plot with some 40 varieties of medicinal plants takes care of minor illnesses, hence saving them from doctors’ bills.

They run a good dairy. Baby finds it easy to maintain one. He says, it all depends on the practices. Dirty cattle sheds and improper feeding patterns create problems for any cattle breed. Cow dung goes to the biogas plant and slurry is used as manure.

Jamnapuri and Malabari goats are reared in neat and clean bamboo sheds. The goats provide additional income and manure.

Mulching is used to minimize irrigation. Medicinal plants, pepper and vanilla get special mulching while leaves from the coffee plant are used as natural mulch for coffee. Weeds in the vanilla plots are removed by slight scraping to prevent pest attacks.

(Source: Gautham Sarang)

Organic farmers are now inviting guests to stay on their farms in order to earn extra income.

Kerala organic – going overboard, almost...

By Tomy Mathews

'An axe is the distance between Attappady and Silent Valley', announces the conspicuous board at the entrance to the Silent Valley National Park, erected by the indefatigable P.N Unnikrishnan, when he served as Chief Wild Life Warden there long ago. For the uninitiated, Attappady was the deforested and chemically abused wasteland of Kerala and Silent Valley the living memorial to Kerala's environmental vigilantism. The dry and almost barren Attappady is an object that is closer than it appeared in the rear view mirror of development, the environmentalists were warning those mesmerized by the immodest green that Kerala flaunted, hiding behind that green veneer a desert in the making.

But when the motley group of environmental activists sought to set up their first organic farm in the state, 'to reclaim for their children and future generations the chemically abused 'Malayala Mannu' they chose Attappady. If it could be proven it works in Attappady, then it could work any where else in Kerala was the rationale. The pioneers appeared almost determined to close out the argument on the viability of organic farming by opting for the most hostile terrain that Kerala had to offer.

The first organic farm that was thus set up in Kerala should be celebrating its silver jubilee any of these days, if people cared about such milestones. So one could start from that green oasis called Sarang that Gopalakrishnan and Vijayalakshmi created in the barren Attappady landscape to talk about organic farming in the state of Kerala. Or you could go further back to the efforts of the late Prof. John C. Jacob with his nature clubs, for there is little in the environmental consciousness of Kerala, including the agitation to save the Silent Valley forests, which cannot be traced back to that gentle soul. 'Poisoning Chaliyar, Poisoning Kalladayar, Poisoning Periyar, Will you import water too?' students of the early 1980s North Kerala campuses ranted after him, little realising that there wasn't actually an iota of the permissible exaggeration of sloganeering in it. The ubiquitous bottled water was less than decade away.

The burden of ones argument is: any which way you look at it, the organic farming movement and the environmental movement in their infancy in Kerala were closely intertwined. In fact the organic farming activist challenged the environmentalist to match his rhetoric with action. Green the soil and your soul! Eco Farm, again in Attappady, followed close on the heels of Sarang. Prof. P. Narayana Menon, besides investing in Eco Farm threw open his own farm in the outskirts of Trichur to activist enthusiasts who were keen to work and experiment there. Teachers vowed to (and some did) take voluntary retirement, commute their pension and buy a piece of land to start a farm. Bank employees took long leave and volunteered to work in Eco Farm. The activist rigour of the environmentalists of the early 80s was a hang over of the radical left politics that many of them had crossed over from. With their move to organic farming, you could say swords did turn into ploughshares after all!

Suman and Tomy Mathew (elements)

This nascent phase of environmental activism spilling over to organic farming was the first wave. The dreamy eyed middle class idealists turned farmer (and often a couple) could be called the first generation organic farmer. Of course, the ordinary farmer, the mainstream one for whom farming was not a choice but an inherited burden was no where in the picture. The campaigns created little impact among them. The agrarian crisis was looming, the portents were ominous but the organised or unorganized peasantry of Kerala still sought redemption in minimum support prices, farm subsidies and bank loans that were often disbursed as chemicals and fertilizers. The 1980's passed by, but not without already seeing the Malayalam translation of 'One Straw Revolution'. The introduction by the translator C.P. Gangadhran set off a lively debate: the green versus the left. With stalwarts like P.Govindapillai, and O.V. Vijayan entering the debate, the chattering class got animated – doubt though if even an acre of chemically abused land was reclaimed as a result. Symptomatic of such issues in Kerala, it was not the farmlands that were being revitalized but Kerala's intellectual gymnasiums. Patabhedam, the avant garde journal which kept its sensors alive to every stirring of sustainable agriculture and organic farming in Kerala ceased publication temporarily in 1992: pseudo indignation on reading articles about 'pesticides in food are no substitute for action'. Go start an organic farm, Patabhedam signed off its valedictory issue.

Almost as if on cue, the second wave of organic farmers that emerged were a refreshingly different lot. Some of them came from alternate health traditions, particularly nature cure.

Many came from direct exposure to the ill effects of chemical farming. Several got introduced to the concept through their involvement in some local activism centered on an environmental issue. The 90s reaped what the 80s sowed vis-a-vis environmental consciousness and organic farming received its natural fillip. People began drawing links between cancer deaths and pollution from factories and cancer deaths and pesticides. The agitation against the pulp factory of Gawlior Rayons and the plight of the Endosulfan victims of Kasargode were watershed phenomena that created a great deal of awareness regarding organic farming and drew many to the fold. Real farmers, those who depended on their farms for their livelihood made their presence felt in some measure among this second wave, though for the most part they still consisted of the ideologically committed. The most notable development of this phase was the formation of the Kerala Jaiva Karshaka Samithi, which remains to this day the most significant presence in Kerala campaigning for the propagation of organic farming.

By the new millennium organic farming scenario in the state changed completely and unrecognizably. Several factors coalesced to expose the hollowness of chemical farming and a more sustainable form of agriculture was no more a choice but a necessity. For one, organic farming came in to the funding priority of NGOs. There was much promotional money available and some results had to be shown. And if NGOs jump on to the band wagon can GOs be far behind? While still pushing pesticides and chemicals down unsuspecting farmers' throat, sugar coated as loans, the government started paying lip service to organic farming. With even the Confederation of Indian Industry pitching for Kerala as an organic destination, the Government of Kerala felt it had to get itself into the action. The organic farming cell under the agricultural ministry of the Govt. of Kerala began functioning from Wayanad. The more significant event was the agrarian crisis that gripped the state in the early part of the present decade. Farmers' suicides began rearing its head in the state and brought to the fore every thing that went wrong with the export oriented and cash crop focused agrarian economy of Kerala. Independent farmers' organisations, most notably Farmers Relief Forum, Karshakavedi and finally even the church backed INFAM (Indian Farmers Movement) began to include in their agenda and campaign the need to switch to environmentally sensitive farming practices. Chemical intensive farming had become a zero sum game and what sounded as cries in the wilderness during the 1980's and the 1990's now appeared to be realistic road signs leading away from penury and self destruction.

Several trends emerged. First and foremost, mainstream farmers made the switch and their 'testimonials' had a ring of credibility more than of any one else. From mere promotion and campaigns, several NGOs began to take direct lead in organising farmers and hand holding them through the phase of conversion. The devolution of powers and resources under the three tier Panchayati raj system helped in people demanding and in several instances succeeding in funds being earmarked for organic farming. In places like Wayanad the district panchayat now offers a direct subsidy for farmers who turn organic. Marappanmoola village in the Pulpally region of Wayanad declared itself the first organic village under the aegis of the Highland Organic Farmers Co operative Society (HICOS). Several organic outlets sprung up in quick succession and while many downed shutters as quickly, the steadfast survived. To borrow the current lingo – organic was cool.

On the flipside, the question of authenticity of organic produce took the lone route of certification and on terms set in alien lands. While costs have come down through group certification, the process continues to be alienating and by no stretch equipped to ensure authenticity. The opportunity to recapture and reinterpret for the modern milieu the traditions of trust inherent in Indian commodity retailing was lost. So today you have organic commissars strutting across farmlands and barking to tribal farmers, who for generations have done nothing but organic farming: 'it is not organic if we do not say so' (to paraphrase the slogan of a certifying agency).

But that was the lesser of the issues on the flipside. The primary problem of 'jaivakeralam' (organic Kerala that is) is its minimal contribution to organic food production. Organic farming in Kerala is still demand led by Europe, America and Japan and therefore limited to coffee, cashew, pepper and other spices predominantly. Our rice and tubers and fruits and vegetables need to be produced in Kerala and it needs to be produced organically and it needs to be produced for consumption by the Keralites, primarily. Until organic farming is able to contribute in measurable terms to the food security of the terribly food deficient state that Kerala is, it will remain in the realm of a technical fix to a problem of the export market. We can boast of the over 20,000 farmers and the nearly 60,000 acres under organic production, but that is if figures alone mattered.

But the signs are encouraging and let's wind off with just two: the group farming initiatives in several paddy fields of Kerala is one. Self help groups of women, college students, neighbourhood groups, members of co-operative societies, village clubs… my last count, which would have missed out many, shows at least 20 such initiatives to reclaim fallow fields and grow organic paddy. The students from Providence College (for women) recently harvested their paddy cultivated in the Vengery village near Calicut amidst much fanfare. The effort has caught public imagination so much that Ministers today vie with each other for the photo op available for planting or harvesting. The last heard, the members of Kerala Legislative Assembly have initiated their own group farming, growing organic paddy!

The other encouraging trend is the emergence of organic villages. Marappanmoola, referred to earlier was the first. Today several others have taken the cue. Some of course are NGO led with no dearth of resources (the principle is the same, be it the organic farm or the organic 'programme': external inputs are mostly unnecessary and often harmful!). But the vast majority of these organic village initiatives are led by local civil society formations. Driving down the Nadavayal - Pulpally road, a little after you have crossed the forests, a signboard suddenly springs to view: you are entering an organic farming zone. May such sign boards proliferate across God's Own Country. And one hopes they will not be made of polyvinyl as in Veliyambam!

VARGHESE JOSEPH AND SHAJEE

'Arackal', Palakkolli P.O., Pulppalli, Wayanad District – 673 579, Kerala. Ph.: 04936 241579.

Both Joseph and Shajee are from farmer families. Joseph works as a teacher. The family practices pranic healing. They were traditional farmers but came into organic farming because of the emphasis on poison free food in pranic healing. Pranic healing methods are applied to the farm. No on-farm creatures are destroyed. They are firm vegetarians. 'We bless our crops while we do our daily meditation,' says Varghese. He also believes in the tradition of 'Chaazhivilakku' (forbidding pests through rituals).

On farm indigenous cattle provide milk to the family and manure to the farm. He claims to know some unique methods of preparing 'Panchagavya' with 'Panchaloha' (alloy of five different metals). He observes that the lack of access to proper inexpensive technologies is the main problem for a farmer.

Both desire that the produce of their farm should bring only good to the user and believe that the farmer is the most important person in any society as he provides food for everyone. A farmer should therefore be honest and responsible. Mixing poison in crops grown for sale while keeping his own food poison-free, in his opinion are not qualities of a good farmer.

(Source: Gautham Sarang)

JACOB SEBASTIAN

Karikkom Pallil (Puthen Veedu), Chekkidikkad P.O., Edathuva - 689 573, Alappuzha, Kerala. Ph.: 0477 2212681

Alappuzha (formerly Allepey) is a coastal district in southern Kerala. In Alappuzha, a large area admeasuring over a 100 sq. kms lies below sea level. This land is known as Kuttanad. Here, water has to be pumped out of fields prior to cultivation, this sometimes can take weeks. It is done by a traditionally developed semi modern machine called the para. Traditionally there has been a kind of bund around the Kuttanad area for keeping away the water from the fields. The most favoured crop of this region is paddy. The Kuttanad paddy fields are below sea level. After harvest, entire fields get flooded with water and look like lakes.

Jacob's two acre farm is in Kuttanad – the rice bowl of Kerala. Kuttanad has the most polluted land in Kerala, due to the heavy use of chemical fertilizers, pesticides, and weedicides in rice cultivation. During 1995 Jacob, a chemical farmer met with Kerala Jaiva Karshaka Samithi and decided to experiment on organic farming. Later he became a member of OEOL.

Radhakrishnan and K.V. Deyal with their companion spouses

Under the guidance of Jaiva Karshaka Samithi, with use of a local common weed 'Mullen Payal,' he developed an ideal organic farming practice suitable for below sea level rice fields. It took him 9 years to arrive at it. After harvest, when the paddy fields are filled with water, the mullen payal is allowed to grow in abundance. The peculiarity of mullen payal is that, it is a local weed that grows easily attaining a thick growth that does not permit any other weed or floating plant to grow. It has water purifying qualities. Fish populations thrive well at its stem base. When water is pumped out fully from the fields, in four to five days, the entire mullen payal decays and turns to excellent manure for rice seeds. The rice seeds are broadcast just before the water is fully pumped out. This way, they stay covered by mullen payal when the water is fully pumped out. No tilling or ploughing is necessary. Very little organic manure is necessary if the mullen payal is properly managed to grow densely. The cost of production and overall expenses is very little. Now Jacob is getting a good yield.

Spider rearing is his hobby. Spiders being good pest controllers, the farm has benefited from this hobby. He has planted posts tied with twine for spiders to weave webs in the fields.

(Source: Deyal and Sarang)

RADHAKRISHNAN

'Vishakh', Muhamma P.O., Alappuzha District – 688 525, Kerala. Ph.: 0478 2863667

Radhakrishnan was attracted to naturopathy, the environmental movement and organic farming in the 1980s. He is one of the founders of the Kerala Jaiva Karshaka Samithi, a pioneer organization of the Organic Farming movement in Kerala. And this long standing partnership with K V Deyal for promoting organic farming based on ecological principles continues to this day. He hesitates to call himself a farmer, because his actual farming activities are confined to a small patch of land surrounding his home. His contribution to the organic farming movement however, is much more than a modest one.

Radhakrishnan has some fruit trees like mosambi, jackfruit, mango, loulolikka, chamba etc. He grows many varieties of vegetables and tubers, pepper etc. Mulch and cow dung are the main manures used in farming. He cultivates a kind of water plant in his ornamental fish tank for mulch. This plant used to grow naturally in ponds before and was traditionally used as a good fertiliser. Since the acidification of ponds it is no more found in abundance.

(Source: Communication with OIP)

INFACT

Kizhathadiyoor, Palai, Kottayam-686 574, Kerala, Ph.: 04822- 211997, Email- ktm_infact@sancharnet.in, Web: www.infact.org.in

Located in the Central Travancore town of Palai in Kerala, INFACT (Information for Action) is a registered NGO committed to the cause of sustainable living. INFACT visualises a society in which sustainability is the living principle in relationships, livelihoods and lifestyles.

INFACT's objectives are to engender sustainable relations in society, strive for food security through sustainable agricultural practices and promote sustainable developmental initiatives for the rural poor especially the ignored farmers, women and children.

Organizations like the Eco-Friendly Farmers Forum, Karshakavedi, Organic Spices Growers Forum, PTD Farmers Group, Vanitha Vikasanvedi - Aroor, Kerala Food Security Coalition etc have been supported by INFACT to grow in strength, effectiveness and outreach. INFACT co-ordinates the activities of the Indian Network of Action Groups (INAG).

Some of its activities directly linked to Organic Farming are through the Organic Spice Growers Forum and the Organic Farming Association of India (OFAI). INFACT functions as the State Secretariat of OFAI. In collaboration with OFAI, it has launched the farmer friendly organic certification system called PGS (Participatory Guarantee System) in Kerala.

(Source: Communication with OIP)

TONY THOMAS

Kizhakkekara, Irumpakachola, P.O, Kanjirappuzha (via),
Palakkad - 678 591, Kerala. Ph.: 0492 4238253, Cell:
09447058253

Tony Thomas is the present director of the legal cell of 'One Earth One Life'. He has bred local varieties of the near extinct cattle, Vechur pachy which is well known for its hardiness. It is least difficult to manage, requires little food, small in stature and yields about 3 liters of milk a day. He keeps many of these cattle and gives them away to many local farmers. He produces on farm organic coconut oil that goes by the name of Sahyadri.

Irumpakachola is a village, in the interior of Palakkad, a border district of Kerala. The village is surrounded by rain forest. 30 years ago this village itself was a densely forested area. Tony Thomas' family migrated here when he was still a little boy and converted some forest land to agriculture. They left a large part of the area undisturbed. That decision helped to conserve water, a very scarce commodity particularly in the summer months.

Tony turned to organic farming in 1994 and then onwards he stopped all external inputs and by 1999 his entire farm had been converted to organic food production. Tony is also an activist and a well known member of the Kerala Organic Farmers Association. His wife Jancy too comes from an agricultural background.

Tony has 30 acres of land with crops such as rubber, coconut, arecanut, pepper, different fruit trees, bamboo, and almost all the short season crops that grow in Kerala.

At first, like other farmers, he faced difficulties with drop in yield and problems with pests. But with experience he has overcome them and has discovered several methods and techniques which have enabled him to convert his rubber plantation, paddy cultivation and other crops from chemical to organic while maintaining the quantity of the output.

Tony believes that it is best to have diversity of crops. This allows the soil to breathe and results in increased production - upto 20% more than one can obtain from a single crop. Diversity gives soil more strength and this is transmitted to the plants and trees, making them resistant to pests.

Usually rubber plantations are covered with grass instead of undergrowth and the 'net rooting' of the grass doesn't allow any other plants or trees to grow and suffocates the soil. To remedy this and bring diversity into his rubber plantation, he planted Karinkurinji among the rubber trees. Gradually this plant covered the floor of the plantation, in the process making the soil loose and rich with the increased micro-biological activities. Naturally this increased production.

Similar changes were made in the coconut plantation as well. Here he has planted fruit trees among the coconut trees. He makes sure that none of the fruit trees grow to suppress the coconut trees. The cropped branches and leaves are allowed to decompose naturally and this contributes further to the richness of the soil.

The paddy fields are near a river. Since diversification in paddy is not practical, he alternates between a hybrid and a traditional variety. Initially the paddy field is flooded with river water to suppress weed growth. Once the paddy has grown sufficiently in height, the water is drained, permitting only moisture retention. This technique is similar to the Madagascar method. The hybrid variety faced severe pest attack initially. But as the soil grew rich in nutrients the immunity of the rice variety increased. It now is cultivatable just like the

Obituary: Jose Joseph Vellukunnel

Nadamadam, Thidanadu P.O.

Kottayam Dist - 686123, Kerala.

The ten acre family farm of Late Jose Joseph grows rubber, coconut, arecanut, coco, mango, rumputtan jackfruit, guava, coffee, pineapple, pepper, nutmeg, passion fruit, papaya, tapioca, tuber crops, banana, ginger, vanilla, and turmeric, variety of medicinal plants, fruit trees and vegetables (30 varities of fruit trees and 15 varities of bamboo).

Jose Joseph passed away recently in mid March '09. Both Tomy Mathews and Rony Joseph believe it to be a great loss to the strength to the organic movement in Kerala and his loss has left a void in the Kerala Chapter of OFAI.

He was the Convener of OFAI Kerala Chapter.

(Source: OIP)

traditional variety. 'We should make the soil high yielding, rather than making the seeds high-yielding,' says Tony.

Water conservation is practised through pits and tiny check dams for harvesting maximum rain water. Mulching techniques are also used to preserve the moisture in the soil.

The cattle and goats he keeps provide the raw material for preparing organic inputs. 'The soil knows its needs and it will take whatever it wants,' says Tony, pointing to a heap of coir waste. 'Usually this takes more than a month to decompose, but in places where the soil needs the waste it will decay within eight or ten days.' For control of pests he sprays a mixture of small chillies, jaggery and water to attract ants which will eventually eat up all the caterpillars.

As director of the Legal Cell of One Earth One Life, he looks into environmental issues and files judicial cases against environmental misappropriations on the part of both private individuals and the Govt. As an active member of Kerala Jaiva Karshaka Samithi, he conducts trainings classes in organic farming and environmental awareness. He travelled across the Western Ghats to record the degradation and changes over time in the area. An LCD presentation by him with photographs gives a good idea of the deteriorating condition of the ghats and its probable impacts on agriculture and climate change for Kerala.

(Source: Deyal, Mathew and Sarang)

THOMAS AND JOLLY

'Pannamattath' Cherukadu P.O. Athiyodi – via Kozhikkodu
District – 673 527, Kerala. Ph.: 04962 660935 [pp]

'Kattulla-mala' means 'windy hill'. It is a steep hill which goes to a height of approximately 250 meters. This is where Thomas and Jolly live. Thomas' father started farming on the piece of land where they live. Cultivation was in the traditional style. Later he started using some fertilizers and synthetic inputs. Since the use was minimal, the lands were not seriously damaged.

The main crops are cashew, arecanut, pepper, coconut. They also cultivate tubers and vegetables. To protect the seedlings from ants they have developed a curious method: they tie pieces of fish on small bamboo pieces which they hang on some trees to attract the ants. They claim it works as ants go for the fish, sparing the seeds within the nursery. (See photo)

They have formed a small farmers group named 'Kadambari'. The group has started group cultivation on a piece of leased land on the hill side. They have almost all varieties of vegetables growing there. Irrigation for the vegetables is done by taking water from the nearby stream.

Apart from organic farming, Thomas and Jolly have bought some plots in which there are small patches of forests. Some of the plots have small clear water ponds surrounded with reed with water even in summer. They bought these plots to protect the forest from the poachers.

They also have a small shop in the valley that sells some of their organic crop produce catering to local customer needs.

(Source: Communication with OIP)

BABU AND MARY

'Editor' Cherukkadn P.O. Thiyodi via Kozhikkode District –
673 527, Kerala Ph.: 04962 660438

Babu had been working abroad for a long period. Subsequently, he quit his job and returned to his native place to be with his wife and children. He decided to do farming. His wife Mary and their three children help in farming.

The land he purchased was on a hill slope. It was full of rocks and was very difficult to cultivate. Babu began by making terraced plots. He broke the rocks and built retaining walls. Now almost the whole land is converted into terraces. When people remove soil in order to construct buildings, he buys the soil and fills the plots which do not have good soil. He wants the farm to be well planned and maintained.

It is amazing that he has never engaged laborers to help him in his farm. Even the breaking of stones, building retaining walls, terracing, filling plots with earth, planting crops... everything is done by him and his wife. They are happy that they are able to thus minimize the expenses of the farm and make ends meet.

Tapioca, coconut, other tuber varieties, rubber and banana are grown on the farm. Rubber is the main income generating crop. He cultivates organically and claims to have good results even with the banana crop. He does not mind the farm progressing at a slow pace in keeping with his attitude to life.

(Source: Communication with OIP)

Keerthichandran and family

Rice growing in discarded cement bags at Keerthichandran's

KEERTHICHANDRAN AND ELSY

'Varapparmbil' Mattanodu P.O. Kozhikkodu District - 673527, Kerala. Ph.: 04962 2659520

Keerthichandran and Elsy are simple farming folk with two school going age children who help on the farm along side schooling. Keerthichandran was attracted to naturopathy and yoga years ago and the entire family follows these natural practices.

Their farm has a variety of trees. They also keep honey bees. They have developed seeds of 'yam' by pollinating two yam flowers that yield tiny yams (photo available) and have also successfully cultivated paddy on their terrace in mud filled sacks (photo available). He is also experimenting with tapioca.

(Source: Communication with OIP)

LUMIERE – Natural Foods Restaurant

G-268, 11th Cross Road, Panampilly Nagar, Kochi 682 036, Kerala. Ph.: 0484 4012000/4012222, Email: lumieremd@hotmail.com, Web: www.lumiere.co.in

Contact: Manjunath, Managing Director. Cell: 09447144822

Lumiere serves food made from organic produce. It is probably the one of its kind in Kerala and caters to a multiple palate with sea food, vegetarian and non vegetarian sections alongside a bakery, juice cum salad bar and an eco shop. Most of the raw material is sourced from its own farm at Kanthallore, Munnar and some from others whose farming techniques have been appraised personally before purchase.

Mr. Manjunath, its managing director comes from an IT background. He returned to Kerala and bought 9 acres of land to practice organic farming. Meeting with Ambrose, a local natural foods restaurant owner was a major contributor to his decision for starting Lumiere. Lumiere the restaurant serving organic cuisine in Cochin is their collaborative endeavour.

Procuring organic food is not easy, raw material costs 50-100% more, he laments. They have difficulty in sourcing organic soya sauce particularly for their Chinese section. The restaurant is patronised by tourists, foreign visitors and locals. Tariffs are 20% – 30% above those in the similar bracket.

Lumiere has a special fresh fruit juice and salads section and a bakery that is a good crowd puller. They are now planning another restaurant in an uptown area of Bangalore.

(Source: Communication with OIP)

C.P. KOYA

Prayaga, Mavilikadave, Kozhikode - 673 010, Kerala. Ph.: 0495-2374658, Cell: 09947022452, Email: cpkoya@yahoo.com

Koya is an expert nutmeg and spice grower. The 1.5 acre farm is located in Vengori, Karuvisseri post. He has been involved in organic farming since 1987. Coconut, nutmeg, clove, pepper, banana and medicinal plants, etc., are grown. Koya retired from Tamil Nadu Electricity Board Department and practices only organic and natural way of farming. He says, 'organic is the only way to keep the soil and earth good.'

(Source: Communication with OIP)

SUBIN JOSEPH

Kallookunnel, Parathode, Velichiyani P.O. Kanjirappally, Kottayam Dist - 686512, Kerala.

Subin Joseph represents a farmer family cultivating 9.50 acres land. His land is located in Edakkunnam of village Kanjirappally.

He grows rubber, coconut, arecanut, coco, mango, rambuttan, jackfruit, guava, coffee, pineapple, pepper, nutmeg, passion fruit, papaya, tapioca, tuber crops, banana, ginger, vanilla, turmeric, variety of medicinal plants and Vegetables.

He is making and using vermicompost and other inputs from on farm animal dung and urine. He has 10 cows, 5 goats, 3 pigs, a fishpond, poultry, rabbits, dog and other farm pets. He is a member of Eco-Friend PGS group.

(Source: Rony Joseph)

MRS. RUBY MICHEAL & MR. RONY JOSEPH

Kariyankal, Vezhanganam, Choondacherry P.O. Kottayam Dist - 686579, Kerala.

Mrs. Ruby Micheal & Mr. Rony Joseph represent a farmer family cultivating 15.08 acres land. Their farm is located at Choondacherry.

They grows rice, rubber, coconut, arecanut, coco, mango, rambutan, jackfruit, guava, coffee, pineapple, pepper, nutmeg, passion fruit, papaya, tapioca, different tuber crops, banana, ginger, vanilla, turmeric, variety of medicinal plants and vegetables. Mrs. Ruby is a member of Eco-Friend PGS group.

(Source: Rony Joseph)

JOHNY MATHEW

Pottamkulam Thenpuzha, Kootickal P.O. Taluk: Kanjirappally, Kottayam Dist - 686514, Kerala.

Johny Mathew represents a farmer family cultivating 51 acres land. His farm is located at Thenpuzha , Mukkulam and Vempala ward of Kokkayar Gramapanchayath, Kokkayar village of Peerumedu Taluk.

Johny Mathew grows rubber, coconut, arecanut, mango, jackfruit, guava, coffee, pineapple, pepper, nutmeg, passion fruit, papaya, tapioca, tuber crops, banana, rambutan, sapota, ginger, vanilla, turmeric, variety of medicinal plants and vegetables. He is making and using vermicompost. He has a processing unit for making white pepper.

He is OFAI Managing Committee Member and member of Eco-Friends PGS group

(Source: Rony Joseph)

GEORGE ANTONY

Eco-Friendly Farmers Forum (EFFF), Earathumuttathukunnel, Poovarany P.O. Taluk: Meenachil, Kottayam Dist - 686577, Kerala. Ph. 04822 226041, Cell: 09447808417

George Antony represents a farmer family cultivating 5 acres land. The farm is located in ward Vilakkumadam of Village Poovarany in Lalam Block of Meenachil Taluka. (More about him in the Organic Seed chapter.)

EMMANUEL THARAPPEL

Tharappel, Kizhaparayar.P.O., Taluk: Meenachil, Kottayam Dist - 686578, Kerala.

Emmanuel Tharappel represents a farm family cultivating 20 acres land. His farm is located in Kizhaparayar.

Emmanuel Tharappel grows rubber, coconut, arecanut, coco, mango, jackfruit, guava, coffee, pineapple, pepper, nutmeg, passion fruit, papaya, tapioca, tuber crops, banana, ginger, vanilla, turmeric, variety of medicinal plants and vegetables.

He is making and using vermicompost and also uses cow dung and cow urine mixture. He keeps three cows, five goats and one buffalo.

(Source: Rony Joseph)

A. J. JOSE

Alappattukunnel Thalanad P.O, Taluk: Meenachil, Kottayam Dist - 686580, Kerala.

A.J. Jose represents a farm family cultivating 4.06 acres land. His farm is located in ward of Maravikallu in village Thalanad.

A.J. Jose grows rubber, coconut, arecanut, coco, mango, jackfruit, guava, coffee, pineapple, pepper, nutmeg, passion fruit, papaya, tapioca, tuber crops, banana, ginger, vanilla, turmeric, variety of medicinal plants and vegetables.

He is making and using vermicompost and also uses cow dung and cow urine mixture. He keeps two cows, a calf and 30 meliponiculture (bee) colonies. He is a member of Eco-Friend PGS group.

(Source: Rony Joseph)

A.V. DAVIS

Aikkarakunnel Ullanad P.O, Taluk: Meenachil, Kottayam Dist - 686651 Kerala.

Member of eco-friend PGS group

A. V. Davis represents a farm family cultivating 3 acres land. His land is located in ward of Ullanad village.

A. V. Davis grows rubber, coconut, arecanut, coco, mango, rambutan, jackfruit, guava, coffee, pineapple, pepper, nutmeg, passion fruit, papaya, tapioca, tuber crops, banana, ginger, vanilla, turmeric, variety of medicinal plants and vegetables.

He is making and using the vermicompost and also makes use of cow dung and cow urine mixture on the farm.

(Source: Rony Joseph)

SHRI RAJU JOSEPH

Vechurettu, Vandenmettu, Idukki 685 551 Kerala.

Expert in organic cardamom cultivation, nutmeg and other spices.

(Source: Rony Joseph)

T. J. KURIYACHEN

Theruvankunnel , Josegiri. P.O. Cherupuzha, Kannur - 670 511 Kerala.

He is promoting and practicing 'Agnihotra' for air purification for organic cultivation. He is cultivating organic vegetables and spices. (Source: Rony Joseph)

V. K. RAJAN NAIR

Sathia Darsana Shylayam, P.O. Kakkoor, Kozhikode - 673 619, Kerala. Ph.: 0495 - 2856357

Rajan is an expert in banana cultivation. He has a banana farm. He preserves and propagates several traditional varieties of banana. He is also associated with the promotion of rice cultivation.

(Source: Rony Joseph)

LIJU LOSE

Vettikuzhakunnel, Meenachil P.O, Pala, Kottayam, Kerala

Expert nutmeg and spice grower.

(Source: Rony Joseph)

A.T. MATHUKUTTY

Ambattu House, Anapettakongal B P O, Edamon, Punalur, Kerala.

(Source: Jacob, UPASI)

ABY GEORGE

Kammathuruthal, Agamkudy, PO Muttuchira, Kottayam – 686 613, Kerala.

Resource person

(Source: Communication with OIP)

ANAMALA FARM

Media Mate, PO Mattathur, Kodakara, Thrissur, Kerala.

Contact: C.A. Robin

Anamala farm conducts farmer training programmes in sustainable agricultural practices.

(Source: Tomy Mathew)

C. P. GANGADHARAN

Chittiyethu House, Chengalloor PO, Puthukkad, Thrissur, Kerala.

Gangadharan is an organic farmer. He has translated many books into Malayalam like 'One Straw Revolution,' 'Limits to Medicine,' etc. He is centrally involved in Kerala's socio political forum - Patavedhanan.

(Source: Tomy Mathew)

ജൈവ കൃഷി സമിര
Association of India

Gangadharan gifting organic produce to guests

Prof. JOSE & Dr. SALIKUTTY JOSEPH KOCHUTHOTTIYIL

Rama Varma Puram P.O., Thrissur, Kerala.

Dr. Joseph is a professor in the Agricultural University at Thrissur. He has written many books on organic farming methods. His books reveal deep insights in practical methods of organic farming and their application.

(Source: K.V. Deyal)

G. CHANDRASEKHARAN NAIR

Rageendram, Kothanalloor P.O., Kottayam District – 686 632, Kerala. Ph.: 04829 242892

Nair is a very elderly organic farmer, practicing organic farming for many years. In spite of his age the farm continues to be organic.

(Source: K. V. Deyal)

K. V. DEVASIA

Umnalanickal, Chempanada, Peruvannamoozhi – 673 528, Kozhikodu, Kerala.

Devasia is an organic farmer.

(Source: K.V. Deyal)

LUKOSE KADALIKKATTIL

Kripa, Palavayal P.O., Kasaragod District – 670 511, Kerala.

Lukose is a naturopath and natural healer. He has a good organic coconut farm.

(Source: K.V. Deyal)

MS N. MINI RAJ

Haritha Ladies Hostel, College of Horticulture, Vellanikkara, Thrissur, Kerala.

Ms N. Miniraj is an associate professor in the agricultural university. She has a small organic farm. Her larger work through the university is related to actively promoting organic farming practices.

(Source: K.V. Deyal)

DR N.N. POTTY

Prof of Agronomy, College of Horticulture, Vellanikkara – 680 654, Thrissur, Kerala.

Promoter of organic farming.

(Source: Communication with OIP)

S. ANITHA

'Santhi,' Belhaven Garden, Thiruvananthapuram 695 003, Kerala. Ph.: 0471-318113

Anitha is an activist who has been consistently involved with the organic farming movement in Kerala. She along with Drs. Satish Chandran and Shanti have been spreading environmental awareness and are presently spearheading an aggressive Anti GM campaign in Kerala.

(Source: K. V. Deyal)

P.D. MANI

Pananthanath Alanad, Anthinad, Kottayam, Kerala.

Mani grows organic rice.

(Source: K.V. Deyal)

MALANADU DEVELOPMENT SOCIETY

Kanjirapally – 686 507, Kerala.

Contact: Abraham Poovathany

Malanadu Development Society has been consistently engaged with promoting organic farming and sustainable agriculture in Kerala for many years.

(Source: K.V. Deyal)

P. J. JOSEPH

Purapuzha PO, Thodupuzha, Kerala.

P.J. Joseph comes form a farming family holding large farming land. They have set up a Gandhian study and research centre. This centre is working on rural sustainable lively hood themes based on Gandhian philosophy. Few years ago they held the largest sustainable exhibition in Kerala which created a forum for spreading the organic message to a wide audience. The farm is an example of good organic farming practices. Presently P.J. Joseph is an elected people's representative.

(Source: K.V. Deyal)

S. S. KAIMAL

214 PTP Nagar, Thiruvananthapuram – 695 038, Kerala.

Kaimal is a retired Superintendent engineer from PWD. He has a vegetable garden on the terrace of his home. He is very well informed on organic farming practices and promotes organic farming through numerous articles in newspapers and magazines.

(Source: K.V. Deyal)

SIDHARDHAN

K. K., Kollam Parampil, Avalookunnu P.O., Alappuzha - 6, Kerala.

Sidhardhan is an organic farmer and a promoter of organic farming.

(Source: K.V. Deyal)

VISALAKSHAN

Mattannoor, Edayannoor PO, Kannur, Kerala.

Visalakshan is an organic farmer and a member of 'Ore Bhoomi Ore Jeevan' working group.

(Source: K.V. Deyal)

V.T. SEBASTIAN

Vadakkemuriyil, Mundaya Paramba, Nallel Iritty PO, Kannur – 670 704, Kerala.

Sebastian is an organic farmer and keeper of plant nurseries. Recently he has ventured into landscaping for hotels, parks, offices and tourist resorts. His landscaping skills are so well appreciated that he is earning a very good income from this new enterprise.

(Source: K.V. Deyal)

V. K. SREEDHARAN

Vathyat, Konathukunnu, Irinjalakuda – 680 123, Thrissur,
Kerala.

Sreedharan is a social worker and has been promoting organic farming for a long time. He conducts regular training programmes for farmers on organic farming and sustainable agriculture.

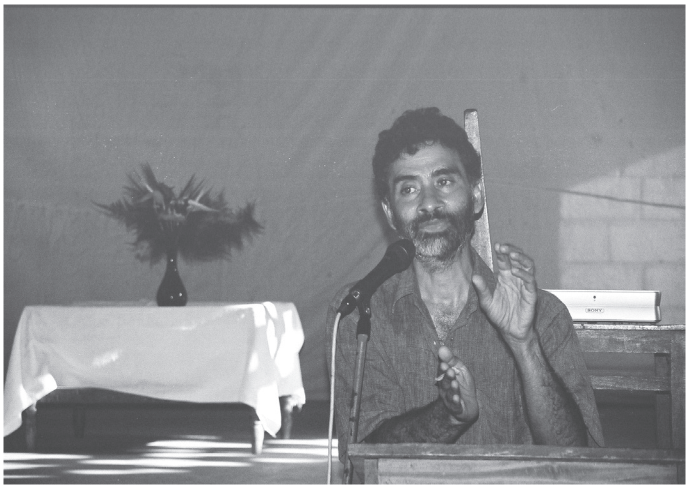
(Source: Alter Media)

P. N. UNNIKRISHNAN

Eco Farm, Bommiyampathy, Palloor P.O., Mannarkkad (via),
Palakkad District, Kerala.

Unnikrishnan is the present C.C.F. As the Chief Wildlife Warden, he was centrally involved in the Silent Valley project. He has played a crucial role in protecting the forest by taking the forest people into confidence as co-protectors.

Eco farm is an experiment in community farming. 33 members contributed Rs. 5000 towards buying the farm to be run on organic principles. The farm is about 5 acres and grows rice and coconut. The message is to promote organic farming by example. (Source: Deyal and Mathew)



Unnikrishnan: experiment in community farming

K. SAHADEVAN/ K.E. KARUNAKARAN

'Sanctuary,' Karmel, Payyannur, Kannur District, Kerala.

They are environmental activists and the main organisers of the Society for Eco Development. They are attempting to develop a farm on the principles of common ownership.

(Source: K.V. Deyal)

T.S. Viswan: a thousand vegetable orchards

Way back in 1986, T.S.Viswan, an agriculture officer, sowed the seeds of a revolution at the Kanjikuzhy Panchayat in Kerala's coastal Alappuzha district. A revolution of the garden variety – that transformed many lives. Until then, the means of livelihood in the region included coir-weaving, toddy-tapping, fishing and coconut cultivation. But with the yield from coconut plantations falling due to root wilt disease, the traditional coir industry in doldrums and mechanized fishing boats running the small fisherman out of business, the people of Kanjikuzhy had to find other sources of income.

Viswan stepped in, organising his first farmers club in a ward of Kanjikuzhi. He demonstrated how root wilt disease could be checked. The result was that the average yield per tree increased from 30 nuts to 50, quite commendable for Kerala where palms are confined to small homestead holdings and therefore low in productivity when compared to commercial plantations.

Viswan also introduced the concept of inter-cropping. He chose tropical vegetables to be grown between the palms. Members of the club would fan out during the planting season and supply planting kits – including seeds, manure and natural insecticides. They also surveyed the number of palms, the diseased ones and the extent of area available for inter-cropping. 'People didn't have money to spend on pesticides. So we experimented, blending traditional knowledge with new technology,' recalls Viswan.

Higher yield brought in more income. But not everyone was convinced. Toddy-tapper T.K.Gopalan, like some others of his ilk, was sceptical about diversifying to vegetable farming. But he was persuaded when the Panchayat President backed Vishwan and pleaded with his people to give the experiment a fair chance. Today, Gopalan grows vegetables on his little-over-a quarter-acre of plot of land. He has also taken land on lease.

The change was evident. Soon, word of the success of microlevel inter-cropping spread to the nearby wards. Within a few years, the entire panchayat was an oasis of organic vegetables. Viswan had inspired the villagers much before the agriculture department or other private plantations started thinking of switching to organic farming. Vijayamma Karthikeyan, a 55-year-old widow says: 'Inter-cropping has saved me and my two daughters, who had nothing to fall back on after the death of their father. Our inherited property in now an acre of palms and vegetables and we even have a biogas unit.' Vijayamma has married off a daughter with income from the land.

There are hundreds like her in this panchayat, where nearly 80 per cent of the 6,000 households are engaged in spare-time organic farming.

Increased production brought in problems of marketing. Viswan's solution was to set up outlets on either side of the national highway at S.L. Puram in Alappuzha. Motorists were more than happy to stop by for organic produce.

And the economic fallout? Diversification to vegetable farming for many families has meant extra income while for others it remains the main activity. On an average, the monthly income of a family has gone up from Rs. 2,000 in the mono-crop days to over Rs. 5,000.

The Kerala Government has recognised the success of Viswan's experiment. It is now introducing organic farming to other panchayats throughout the state. Viswan was selected for the national Karshaka Mitra Award in 1997. He is now a technical advisor to the coconut board. Retirement from government service has given him time to travel across the state.

Contact T.S. Viswan at:

Chintha Bhavan, Karikadu P.O., Thanneermukkom, Cherthala, Alappuzha-688 527, Kerala. Ph.: 0478 2582685, Cell: 09447265757.

(Source: Magazine)

NANDAKUMAR

Paruthikattukalam, Kondayur, Desamangalam (via), Thrissur District, Kerala.

(Source: Alter Media)

AVIYIL JOSEPH

Nilamboor, Malappuram District, Kerala.

Aviyil Joseph is an exemplary organic farmer. He was awarded the best farmer award by Malaya Manorama, a popular family magazine of Kerala.

(Source: Alter Media)

PNEME GEORGE

Sub-editor, Karshakasree magazine, Malaya Manorama, Kottayam – 686 001, Kerala.

Pneme George writes regularly on organic farming issues. George has reported many organic farms of Kerala and has been using print media very effectively to promote organic farming.

(Source: Alter Media)

K.R. SANKARANKUTTY

Vandana Organic Farmers Society, Karamakkal, Vappuzha P.O., Chazoor, Thrissur District, Kerala.

(Source: Alter Media)

C.M. JOSEPH

(Kurunnappan) Kaualakkal, Vaishaiamvihaagam P.O., Chambakulam, Alappuzha District, Kerala

(Source: Alter Media)

MATHEW PAUL

Chalakuzhy, Kattoorkara – 689 101, Tiruvalla P.O., Kerala.

(Source: Communication with OIP)

THE KERALA AGRICULTURAL DEVELOPMENT SOCIETY

Thodupuzha, Idukki, Kerala. Ph.: 04862-223717, Fax: 04862-226107, Cell: 09847413168

The Kerala Agricultural Development society (KADS) owes its origin to an organic vision and the commitment of a group of farmers who were faced with odds.

KADS started organic farming and certification in 2001, It claims to have 125 certified farmers, 1000 farmers under group certification (ICS) in Idukki District. The main crops are cocoa, pepper, vanilla, cardamom and other spices, vegetables, coconut, banana, honey, fruits.

All KADS produce are certified by INDOCERT.

Products: Dried cocoa beans, cocoa mass, cocoa powder, cocoa butter, chocolate and drinking chocolate and cocoa beans (organic & non organic) graded, quality, alkalized (optional).

(Source: Brochure)

WAYANAD SOCIAL SERVICE SOCIETY (WSSS)

PB NO. 16, Mananthavady, Wayanad, Kerala 670 645. Ph.: 04935-240314, Fax: 04935-242388, Email: wsss@sify.com/ wsssindia@dataone.in, Website: www.wsssindia.com

WSSS is a voluntary organization established in the year 1974. It works in the districts of Wayanad, Kannur and Malappuram in Kerala and Gudalur taluk in Nilgiri district of Tamilnadu.

Its areas of intervention are: Organic farming, certification, and marketing. Rural energy development. Tribal development. Revitalisation of health traditions and medicinal plants conservation. Watershed development.

Organic Farming:

WSSS is a pioneer organization in the entire state of Kerala for large scale promotion of Organic Farming. At present, it has coverage of 2800 acres of 2000 farmers under small holder certification programme. Of them, 506 farmers have obtained organic status for different crops in 806 acres in Wayanad district alone. Certification has been obtained both under European Union regulation and USDA. WSSS is the only accredited agency who has the status of Service Provider for organic farming under National Centre for Organic Farming (NCOF), Govt. of India in Wayanad District. WSSS has developed a strong Internal Control Systems (ICS) that regulates the functioning of the organic certification programme. WSSS has its own processing centre. This is a well equipped unit established with machinery viz. cleaning plant, de-stoner, sorting machine, spiral machine and milling units all supported by modern technology for processing of organic products.

Certified Organic Products Available:

Herbs and Spices: Black pepper (MG1, TGEB, TGSEB), white pepper, cardamom, clove, cinnamon, ginger, turmeric, nutmeg and mace, vanilla, bird's eye chilli, lemon grass, curcuma aromatic.

Other Organic Products:

Coffee, rice, banana, jack fruit, mango, passion fruit, tamarind, cashew, coconut, yam, tapioca, arecanut.

(Source: Brochure)

KURISUMALA ASHRAM

P.O. Vagamon - 685 503, Kottayam District, Kerala.

Kurisumala Ashram was founded by Fr. M. Francis Acharya. It is a monastic community dedicated to worship, meditation and social uplift. The inmates of the Ashram have transformed 200 acres of rocky wasteland into pastures for high yielding cows. This has been achieved with the use of organic manure - cow dung and slurry irrigation. Bio-gas is used as fuel for the community kitchen. The dairy farm at the ashram helps about 100 families by collecting milk from them at a good price and distributing it.

(Source: Communication with OIP)

MRS. ANNIE GEORGE

Mandanam Eco Gardens, Thiruvankulam - 682 305, Ernakulam District, Kerala. Ph.: 0484-2786820.

Mrs Annie George is the wife of Prof. N.P. George, a pioneer of organic farming in Kerala, who died early in 2005 after a tragic accident. She carries on the organic farming traditions on their farm and is now a member of OFAI in her own right.

Prof. George served as a professor of chemistry in various government colleges in Kerala. He had however dispensed with all chemicals in farming.

Shri K.V. Deyal considers the passing away of Prof. George as a great loss to the organic farming community in Kerala as he was the one person they always freely approached for scientific explanations and authentication.

George switched his ten acres residential gardens to organic farming in 1988. Mandanam Eco Gardens is located in Chottanikara panchayat, a very famous pilgrim centre. It is farmed on the multi-species, multistoried agro-forestry pattern without the use of fertilizers and pesticides, fully capitalizing on rainwater, solar energy and meticulous organic recycling.

Vigorous mulching and on farm recycling are the strategies for successful organic farming. Species diversity is well maintained with coconuts, arecanuts, nutmeg, mango, jackfruit, neem, pepper and miscellaneous tree crops, in addition to extensive cultivation of fruit trees like banana, papaya, pineapple and tubers: cassava and colocasia. Livestock integration and pisciculture are also basic features of this eco garden.

George construed farming as an equitable solemn contract between the farmer and the farm wherein the farmer is entitled to the net product alone and the entire plant residue is to be returned to the farm for organic recycling so that after every crop the farm increases in vigour and vitality.

George did not turn or till the soil since he had assigned this portfolio to the soil flora and fauna who laudably do it with the exquisite bonus of rainwater conservation. A bird bath is provided to entice birds to the gardens to devour insect pests and give precious droppings as manure. He translated Gandhian non-violence towards his fellow creatures as applicable also to all creations of Mother Nature.

DR. AASHA VINOD KRISHNAN

Kampurath House, Kollengode, Palakkad – 678 506, Kerala. Ph.: 0492 3262606, Email: ashavinodkrishnan@yahoo.co.uk

Promoter of organic farming.

(Source: Communication with OIP)

WAYANAD ORGANIC FARMING CONSORTIUM

C/o Sustainable Development and Organic Farming Cell, Agricultural Wholesale Market, Ammayipalam, Sulthan Bathery P.O., Wayanad -673 592, Kerala. Ph: 04936 223192, 226985, Email: agrimarketbathery@gmail.com

Wayanad Organic Farming Consortium is an association of organic farming farmers and promoters in Wayanad. It is promoted by Sustainable Development and Organic Farming Cell, Department of Agriculture, Government of Kerala. It acts as a common platform for various agencies engaged in organic farming. NGOs', societies, farming groups and 3500 farmers are associated with it covering an area of 2250 hectares under organic farming. Marketing and market development activities are undertaken in association with Agricultural Wholesale Market Bathery, Wayanad. Its activities also include collection, compilation and conservation of traditional indigenous knowledge and practices, publications and liaison.

Organic and under conversion products: Black pepper, white pepper, coffee (robusta), coconut, coconut oil, ginger, turmeric, clove, cardamom, vanilla, medicinal plants, vegetables, fruits: papaya, jack fruit etc.

The Sustainable Developement and Organic Farming Cell is an exclusive wing in the department for the promotion of organic farming in the state. The cell is engaged in market development activities and coordinates the implementation of the organic farming schemes of the State.

Associates of the consortium are:

Wayanad Social Service Society – wsss@sify.com

Vasudha – vasudhaorg@yahoo.com

Organic Wayanad – organicwayanad@yahoo.co.in

Voice – voicewayanad@sify.com

Hilda – hildasby@eth.net.,

Haritha, Rastha, Odapallam Jaiva Karshaka Sangam, Brahmagiri, MSSRF, HICOS

(Source: Brochure)

ORGANIC KERALA

Al Manar Complex, Opp. Avenue Regent, Jos Junction, M.G. Road, Kochi, Kerala. Cell: 09847133083, 09846247943, Email: organickerala@rediffmail.com

Organic Kerala is involved in the following activities: Organic farming, sale of organic food at fair price, farmer trainings, publications, exhibitions, organic seed bank and EM technology.

(Source: Brochure)

NATURAL HARVEST (INDIA) PVT LTD

(A CGH Earth Experience Hotels Community Benefit Venture)

Head Office: 24/1350, Seagull Road, Willindon Island, Cochin - 682 003, Kerala

Site Office: Building No. 15/422, Attapallam P.O., Kumily 685 509. Ph: 04869-222315, Email: naturalharvest@gmail.com

Natural Harvest (India) is an organic export venture promoting organic farming through the local community in the Periyar forest. Its principal goal is to promote the organic farming concept in forested areas. Presently this is being carried out in the Mannakkudy, Palliyakkudy and Vanchivayal tribal settlement areas. 450 tribal families have been helped to certify their farms by Lacon Qualitat of Germany.

Their collective certified produce are pepper, chillies, curry powder, ginger, cardamom, turmeric, lemon grass, nutmeg, mace, cloves, wild pepper, vanilla, cinnamon, mustard, cumin, garlic, coriander, honey, salt.

(Source: Brochure)

KARSHAKAN

Res: 37/475 Green Dreams, Yakkara Road Near D.P.O, Palakkad City PO - 678 014, Kerala

Ph.: 0491 2528052, Email: chamymohan@rediffmail.com

Farm: Kalathil Farm, Kattupadam, Muthalamada PO, Kollengode Via Chittur Taluka, Ph.: 0492-332534

Contact: C. Mohan

Karshakan has an 18 acre organic farm producing coconut, arecanut, coco, coffee and paddy.

(Source: Communication with OIP)

SWAPNAM - Organic Farming Training Centre,

Mookkam House, Kummathu west, Kusciachira, Thrissur – 680006, Kerala. Ph 0487-2428156,

Swapnam, is an Organic Farming Training Centre located on 2.5 acres of land. Trainings in various techniques of sustainable agricultural are provided to individuals at very nominal rates inclusive of food and accommodation. The centre also provides training free of cost to 30 school children each year. On an on going basis research on sustainable techniques are carried out.

(Contact: Dr. Elizabeth Joseph)

(Source: K.V. Deyal)

M.A. IYYUNNI

Mafiyekkel House, Puthen Peedike , P.O. Thrissur - 680642, Kerala.

M.A Iyyunni happened to attend an organic farming class organized by K.V. Deyal in 1998. This motivated him to switch to organic farming on his six acre farm. Today the average annual yield is 400 coconuts per tree while the state average for Kerala is 30.

This achievement was reported by B.B.C as a success story in one of their documentaries on the poor state of coconut yield in Kerala. (Source: K.V. Deyal)

P.K. BALAKRISHNAN

THEJAS, Poilur P.O., Kannur - 670 693, Kerala

P.K. Balakrishnan has an organic farm and the coconut yield on his farm is very good. (Source: K.V. Deyal)

BALASUBRAMANI. G.

BASUMA, P.O. Thattarambalam, Marelikkare , Alappuzha – 690 103, Kerala.

Has a 20 acre farm in Tamil Nadu which he has recently started to convert to organic methods.

(Source: K.V. Deyal)

SMT. NARGEESE

Teacher, Poovan China, P.O. Randathani, Malappuram District, Kerala.

Smt. Nargeese is the present president of Kerala Organic Farmers Association. She is an avid promoter of organic farming.

(Source: K.V. Deyal)

K.P. UNNI GOPALAN

Mundukandi, Veedu, P.O. Thoovakkod, Chemanchery, Kozhikode District – 673 304, Kerala.

Is an organic farmer and promoter. He is the present secretary of Kerala Organic Farmers Association.

(Source: K.V. Deyal)

KRISHNA KUMAR AND AASHA

Haiku, Cheliya, Koyilandy, Kozhikode District, Kerala.

The yogashala run by Krishna Kumar and Aasha serves organic and natural foods. (Source: K.V. Deyal)

HEERA NETTUR,

Sreevalisam, Kilur P.O., Payyoli, Kozhikode, Kerala.

Is the Deputy Director, Agricultural Department and is keenly promoting organic practices through the department.

(Source: K.V. Deyal)

Adv. JOSEPH PHILIP

Olassayil, Thrikkodithanam P.O., Changanasserry, Kottayam District, Kerala.

Has been the previous block panchayat president and has formed a group in Medeppely that is conducting trainings and promoting organic farming.

(Source: K.V. Deyal)

FR. K. MAMPILLY

Sevashram, Mantattukara, Puliyanam P.O., Angamaly 683 572, Ernakulam District, Kerala.

Has a large organization through the many centers of which they are promoting organic practices for growing coconut.

(Source: K.V. Deyal)

P. C SETHU MADHAVAN

Smruthi, Karayad P.O., Kozhikode, Kerala.

Is the Managing Director of a monthly Malayalam magazine, 'One Earth One Life,' a publication dedicated to promoting sustainable farming that has had an uninterrupted publication record of thirty years. He is also an organic farmer.

(Source: K.V. Deyal)

P.K . DHARMARAJ

Milanipu , Kodungallur P.O, Thrissur, Kerala.

An organic farmer and an activist. (Source: K.V. Deyal)

DR. P. K. RAMACHANDRAN

Peedikaparambil, Periganam west, Thrissur 680 686, Kerala.

Is an ayurvedic doctor and has been practicing organic farming on his coconut farm for over 18 years.

(Source: K.V. Deyal)

G. P. BALAN

Mattathil, House, Kalavoor P.O, Alappuzha, Kerala.

Is an organic farmer.

(Source: K.V. Deyal)

SAJEEV KUMAR

Kollamparompil, Avalookunnu P.O Allappuzha, Kerala.

Sajeev Kumar has a good organic farm with over 22 varieties of vegetables.

(Source: K.V. Deyal)

C.G PRAKASAN CHEMMANED

2 Mayithara. Market P.O. Cherthela South, Aleppuzha, Kerala. Ph.: 0478 281 4518, Cell: 09846136793.

C G Prakasan, has a six acre farm. Because of labour scarcity, he switched from paddy to growing vegetables with great success. An interesting aspect of his lady's finger patch is that he has sown two seeds together. On enquiry, he explains, 'with two plants growing together, the stems play a supportive role to each other, especially in the sandy fields where plants can easily be uprooted by strong winds or heavy rain.' The lady's finger is completely organic, while other vegetable patches of gourds, cucumbers, gherkins, egg plant etc. are in the final stages of conversion. He is testing a fish based bio-solution for the cure of white spot disease on amaranths and says the results are encouraging. The produce is sold in the local market at an average turnover of Rs. 2,000 per day.

(Source: Farm visit Nyla Coelho)

P. V . VIJEYAMATHA PANIEKER AND MINI VIJEYAMATHA

Nevaneetham, Muhamme P.O., Alappuzha District- 688 825, Kerala. Ph.: 0478- 2868909 Cell: 09446155299

Mini Vijeyamatha is a school teacher who single handedly takes care of their two and half acre farm in spite of a full time job. She is a keen learner and has adapted organic techniques on her farm.

(Source: Communication with OIP)

DR.V. S. VIJAYAN

Chairman, Kerala State Biodiversity Board, Pallimukku, Pettah Post, Thiruvananthapuram – 695024, Kerala. Ph: 0471 2740240, Fax: 0471 2740234, Cell:09388249845

(Source: Communication with OIP)

INDIAN ORGANIC FARMERS PRODUCER COMPANY LIMITED

IV/294, Thottumugham PO, City Aluva, District Ernakulam - 683105, Kerala.

Ph.: 0484-2620659, Fax: 0484-2620659, Email: info@iofpcl.com. Website: www.iofpcl.com

IOFPCL is a farmers company involved in production and marketing of in conversion and certified organic produce.

Contact: P. J. Chackochan

(Source: www.iccoa.org)

K.V. SIVAPRASAD

Swasraya, Mottammel P.O., Kannur- 670 331, Kerala. Ph: 0497 2862987

Sivaprasad is a retired school teacher and social activist. He has two acres of land on which he practices natural farming closely integrated with biodiversity conservation of local species.

He is very knowledgeable about traditional ayurveda and medicinal plants. As Director of the Awareness Programme wing of One Earth One Life, he is actively engaged in conducting Nature Education Camps and taking classes in schools and colleges on conservation and sustainable issues.

He came into the organic movement in 1994. He is the present Editor of OEOL magazine. He is a full time social worker.

(Source: K.V. Deyal)

RASTA-Rural Agency for Social and Technological Advancement

Kambalakkad P.O, Kalpetta, Wayanad – 673 121, Kerala. Ph.: 04936 286725, Fax: 04936 284197, Email: rasta_k@satyam.net.in, rasta@eth.net, Web: www.rastaindia.org

Contact: C.K. Vishnudas, Research Officer

RASTA began in 1984 as a branch of the Barefoot College, the Social Work and Research Center of Tilonia, Rajasthan with the belief that solution to rural problems lie within the community.

RASTA address the problems of rural people especially women, indigenous communities, small and marginal farmers related to agriculture deterioration, rural unemployment, food security, technology gaps in rural development, backwardness of women and tribal communities, water and sanitation, conservation of ecosystems, health and decentralized governance.

RASTA serves a population over 1,50,000 in Wayanad and other districts of the state.

(Source: Website)

THANAL

H-3, Jawahar Nagar, Kawdiar P.O., Thiruvananthapuram – 695 003, Kerala. Ph./Fax: 0471 2727150, Email: thanal@md4.vsnl.net.in, mail.thanal@gmail.com

Contact: Usha S, Executive Director, Sridhar R.

The main programmes that Thanal organizes as part of promoting organic farming is the Organic Bazaar - an alternate market of local organic produce. Training programmes on organic farming practices are conducted at regular intervals. It is one of the leading organizations working on sustainable development issues in the southern Kerala.

(Source: Communication with OIP)

MANNIRA

Al Manar Complex, Opp. Avenue Regent, Jos Jn., M.G. Road Kochi, Kerala. Cell: 09847133083/ 09895084688, Email: organickerala@rediffmail.com

Mannira is a charitable society initiated by Thrikkakara Grama Panchayat Cooperative Hospital. It is promoting bio-waste management practices.

VENKITESH

Suresh Bhavan, Thrissilery, Kartikulam P.O., Mananthavady, Wayanad – 670 646, Kerala. Ph.: 04935 250413.

Venkitesh a young farmer, hails from a farming family with 10 acres of farmland. The farm is located in Thrissilery, Kartikulam, Wayanad. Venkitesh and his family gave up chemical farming decades ago. Being influenced by One Straw Revolution, One Life One Earth magazine and Shri. K.V. Deyal he grows paddy, coffee, pepper, banana and ginger based on insights gathered from his readings and interactions with fellow sustainable farmers. The farm keeps 4 cows, 1 goat, 5 hens and 3 ducks. Farm inputs are generated from manure sourced from these farm animals. He also uses cow dung, dried leaves and BG slurry on his farm and laments that on his farm wages are high, output is low, wild animals like elephants, boar, monkey etc. attack cultivated crops. He would like to understand more about organic farming practices so that he can apply them on his farm for maximum benefit.

(Source: Communication with OIP)

C.G. HOTELS EARTH GROUP

C.G. Hotels Earth Group runs many resorts on ecological principles. The entire hotel fresh food needs are grown organically on premises or on farms locally. Farm and hotel waste is recycled using organic methods. Tourists are encouraged to work on the farm and learn organic farming techniques. Their butterfly gardens and banana gardens are star attractions. They have been winners of awards from the State Pollution Control Board consecutively for 4 years for clean and green business practices and have been recognized with awards by the Central Government for eco-based tourism.

CGH group has branches at Maria Cumaragam beach, Takedy, Ernakulam, Palakkad, Lakshadweep. It may be noted that CGH switched from running very prosperous casinos to an eco-based sustainable service industry.

(Contact: Mr.Subramaniyan, General Mananger, Marari Beach Resort, Maraikulam, Allappuzha)

(Source: K.V. Deyal)

KERALA – PGS FARMER GROUPS

ECO FRIEND

Group of 10 farmers with 115.5 acres under organic cultivation. They grow mango, tuber crops (tapioca, amorphophallus, etc), vegetables and spices. OFAI is the Facilitating Council for this group.

Convener: George Antony, Vil. Poovarany, Tal. Meenachil, Dist. Kottayam - 686 577, Kerala.

Sarojani and the brinjal economy

Smt. Sarojini SAdanandan Veliyil.
Patjirapolly P.O. Alappuzha

Smt. Sarojioni has never gone to school but is using her intelligence and innovations effectively to farm the small plot of 1/3 acres (32 cents) to make a decent income towards meeting her family needs.

Through the local sangam, Smt. Sarojini was helped with a bank loan of Rs.17, 500 for the purchase a local breed cow. On her way back from selling milk each day, she returns with fish waste collected from hotels. This she mashes in water to extract fish solution. The coarsely strained solution is then mixed with dung and cow urine to make a bio-solution that is used for watering her vegetable plot. The fish remains are chopped and fed to hens and ducks.

The premium quality vegetables grown in this manner fetch a good price. The income is used to pay back loans and to sustain her family. The sangam has also given her an incentive, which is, if the loan installments are paid back regularly, the sangam would contribute the interest. This has made her very regular on payments.

What is noteworthy is that, in the very beginning, she made a decision to put away the earnings from one vegetable crop as saving and picked on Brinjal! All earning from the sale of brinjal is put aside as savings. In a short period these savings have accrued to Rs 12,000.

There is no B-School or fancy financial strategy consultancy involved here. It is sheer hard work, innovative foresight and mental discipline that have enabled her to provide for her family with resource generated from 1/3 acres of land, apart from saving for a rainy day.

She feels a little self conscious when she goes to collect the fish waste from the hotels, but has learnt to overcome the discomfort. The greatest incentive has been the premium price her vegetables fetch and they are sold out in no time at all.

(Source: K V Deyal as told to Nyla Coelho)

South India

Tamil Nadu

Interview Dr. G. Nammalwar

17/9, 5th street, Srinivasa Nagar, Thiruvanai Koil,
Trichy - 620 005, Tamil Nadu. Ph.: 04326-240555, Cell:
09442531699 Email (PP): m.nair@csuohio.edu

Dr Nammalwar is the first organic farmer to be awarded an honorary doctorate. He is a guru who has nurtured hundreds of shisyas and inspired thousands of farmers to convert to organic.

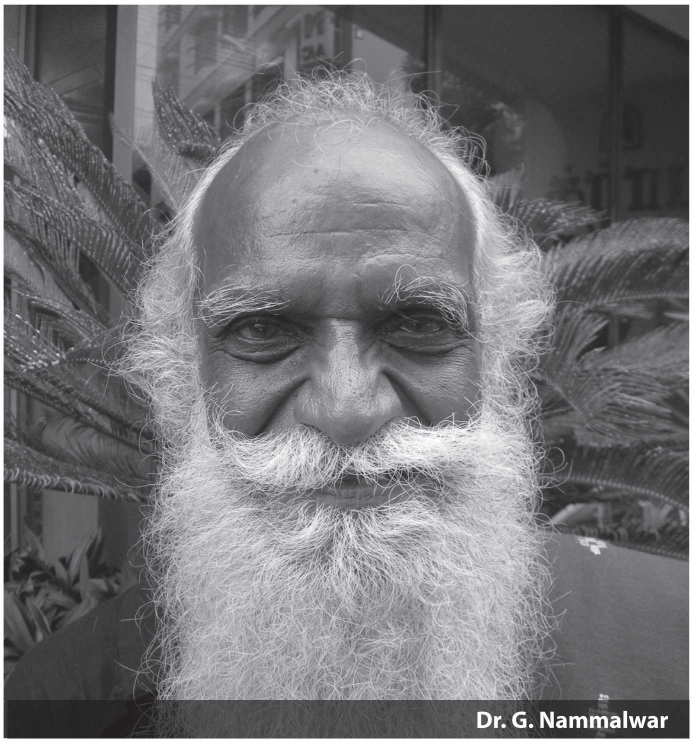
Claude Alvares: You are very well known in Tamil Nadu as an organic farmer and natural scientist. How did you get involved with organic farming, considering that you have a college degree, a B.Sc in agriculture etc.

G. Nammalwar: I was not altogether new to farming. Earlier, my brothers and I were working in my father's land in the traditional way of farming. However, after I attended agricultural college where I got a B.Sc in agriculture, I started using modern methods in the Agricultural Research Station at Koilpatti which was intended for rainfed crops under black cotton soil. Later I joined a voluntary organization called Islands of Peace, Kalakad founded by Rev. Father Dominique Pire, 1958 Nobel Peace prize winner and there too I was asked to use Green Revolution practices. But it was under irrigated condition. We helped the farmers to dig wells and install pumpsets. After working for 10 years, I realized that only traders were flourishing and that the farmers were either in debt or that their status quo was as before. So I got fed up and left the organisation and decided to directly help the farmers who were suffering. But for a long time I was in search of the methods that would help the farmers to come up.

My colleagues and I decided to start an organisation called Kurumbam in Thanjavur district in 1981where we began trainings in villages in social forestry activities. Kurumbam means family. However I found that, there too, the Forest Department was not prepared to change its attitude. It was only interested in planting eucalyptus in the grazing land and thorny subabool trees in the lake.

In 1983, there was a very big movement in Tamil Nadu regarding the social forestry programme. Around that time I attended a seminar in Auroville where I was introduced to Bernard Declerq. He took me to see his 3 acres farm and explained things to me. That was good inspiration. He recommended me to AME . It was then that I realised a systematic approach is necessary for rural farmers to improve their condition since all their problems are inter-related.

At the end of 2 or 3 years, there was a suggestion from different groups to try for certification because project-holders of NGOs were given only an introductory course and it was not sufficient for certification. So three organizations came together to conduct Social Forestry Programme, Kudumbam and AME for field workers in local language, Tamil training programme on ecological farming. Further, we started a movement, LEISA (Low External Input Sustainable Agriculture) in 1990 with farmers and NGOs as its members.


Dr. G. Nammalwar

C.A. What is the motivation for farmers to switch to organic farming?

N: There are three main reasons. One is, farmers have realised that land and the natural environment cannot be sustained through chemical farming. All food is poisoned through modern farming. Second, the farmer finds that the cost and quantum of inputs are increasing day by day and so the farmer cannot pay back the loan. The result is that the small and marginal farmers are losing their lands, becoming landless or they are allowing the land to go fallow and migrating to the river belts for seasonal operations and other states and countries doing menial jobs for survival. Third, the export market is facing a problem because the importers of food materials from USA and other European countries find that our foods contain too much of pesticides and insist that these have to be removed and that food has to be organic. So the pressure for changing over is coming from the export market also. Finally, techniques have so improved that a farmer can switch over to organic farming without losing too much income. But most of all, the farmers are interested in organic farming because chemical farming has become uneconomical , grain yield has started declining. These are the prime reasons.

CA: How is it that for the last 30-40 years we got sucked into this chemical way?

N: The state wanted more grain production. They started brainwashing the people. People were given fertilisers practically free 50 years ago or they were subsidized. Even now in Tamil Nadu, electricity is completely free for farmers so that they can go for irrigated agriculture. But once the government stops subsidies on chemical inputs, the farmers will have to stop using them or change over to some other way of farming. Without water, chemical farming is impossible.

CA: Do the farmers make the switch from chemical to organic farming at one go?

N: No. When they start thinking about switching they come for more information. They start by switching first to herbal pest repellant. Then they go for organic methods of growing crops and lastly they will switch to growing with indigenous varieties. Thus they are not switching over completely, but on a piece-meal basis.

CA: Are those farmers who are doing organic farming convinced that the yield is comparable to that from chemical farming?

N: Oh yes they are convinced, but right now, their concern is at the economic level. In organic farming we are not spending on external input. At the same time it is labour intensive. I met a landed woman farmer who said that she is prepared to give the land on contract basis for banana plantation rather than growing any crops herself because it is too costly. Basically, in our state there are a lot of industries coming up and wage for agricultural labour is therefore high and often it becomes difficult to get labour.

CA: What are the other obstacles for farmers to convert to organic farming?

N: On economic plane many farmers think more of money and not of their home needs and families. On cultural plane they are also tied up with family pressures. Also the women are not involved in this. Secondly, the companies which manufacture and distribute chemicals, hybrid seeds and machineries and so called scientists in the universities deter the farmers from switching over to organic farming. The universities act against organic farming by teaching about and encouraging modern hybrid varieties, genetically manipulated seeds and precision farming. That is a major problem. However the farmers' movements are giving support to the organic farming movement.

C.A: Would you say that there is an organic farming movement in Tamilnadu? How was the movement initiated and how is it being sustained?

N: In all the districts of Tamil Nadu, there are farms cultivating in the organic way. Some of them are fit for training and 50% of the 100 farms need to be upgraded to become learning centers. Now a days a team of experts conduct trainers training on the farm itself. Thirty to forty participants in each batch are trained for three days. Till now we have conducted many such training. As for organisations, there are always people with initiative and leadership. When the NGO or farmers forum arrange meetings, sometimes around a thousand farmers come for these meetings. Sometimes they are arranged in marriage halls. MPs and MLAs are also participating and attending the meetings. During 2008 'Anandha Vigadan' well known Tamil weekly and our foundation, Nammalvar Ecological Foundation for Farm Research and Global Food Security (NEFFRGFS) together organised seminars and trainers training. Vigadan is publishing a Tamil fortnightly in the name of 'Paumai Vikatan' from 1987.

Three more monthly magazines, vivasaiyigal ulagam, 'uzhavar osai,' 'nam ughazear' are promoting organic agriculture.

'Kalluppu,' Tamil monthly published by Isha Yoga Centre, Coimbatore carries articles on tree growing, ecology, environment and natural farming.

The popular English daily 'The Hindu' publishes organic farming case studies every Thursday. All India Radio and TV stations also broadcast news and pictures on organic farming. Our connections with NGOs working in other states like Kerala, Karnataka, Andhra, Pondicherry, Maharashtra and Orissa are helpful in sharing experiences and seeds.

C.A: Coming to the different rice varieties - What is the status of the older seeds? How many farmers are using the older seeds?

N: When I go to the remote areas, the old seeds are still available. Some of the farmers are still growing even under dry conditions. Only those strains will remain. Otherwise in the dry belt, where tank water is available, they have switched to high yielding varieties. They say within 3 months the grain will come up. But in some places they have started re-using the old varieties once again. Bio-diversity is imperative to adapt to different ecosystems.

C.A. Are there any special techniques of organic farming practiced in Tamilnadu that you can tell me about?

N: We promote knowledge on 30 different subjects, principles and practices to start with.

1. Madagascar method of rice planting.
2. Using green manure (Ihomoea) available at all water sources.
3. Preparing Amudha Karaisal modified form of Amrithi pani and manure tea.
4. Herbal pest repellant and biological control.
5. Panchagavya
6. Vermiculture – vermicompost – vermiwash
7. Fish amino acid and EM
8. Egg – lemon juice emulsion
9. Improving the soil fertility by sowing twenty kinds of crop seeds and ploughing into the soil.
10. Mulching – lead-trash-lime
11. Azolla
12. Honey bee rearing
13. Double digging
14. Rain water harvesting
15. Farm designing
16. Selection, testing, treatment, storing
17. Agro forestry
18. Cow horn manure
19. Mushroom cultivation
20. Perma culture
21. Bio-dynamic agriculture
22. Do nothing farming
23. Bio-fencing
24. Panchagavya preparation with goat products

The first doctor in organic farming

The trajectory of Dr. G. Nammalwar and of the Organic Farming Association have been intertwined from the very inception of the Association. Dr. Nammalwar was present at the foundation meeting of the Association in Bangalore in the year 2003. Later, due to his seniority in the movement, the Association requested him to become an Advisor to the Association, a position that Dr. Nammalwar graciously accepted.

We at the Association were therefore wholly delighted when we received word that Nammalwar had been awarded an Honorary Doctorate for his outstanding work in the promotion of organic farming by the Madurai based Gandhigram University. The University ought to be congratulated for its wise and perceptive decision. But our deepest congratulations and good wishes go to Dr. Nammalwar who has finally been given the true recognition of his real worth to this society of ours.

25. Vegetative propagation
26. Certification of organic farms
27. Rainfed millet cultivation
28. People's cooperative for purchase of organic products.
29. Value addition
30. Indigenous crops and cattle conservation and promotion

Everywhere in the countryside there are 5-6 plants which are cattle-repellents and the farmers know this very well. They grow easily and if you put 4-5 leaves in a pot mixed with cow urine for 10 days, they start smelling. The farmers put 1 litre of this mixture in 10 litres of water and they spray this on the leaves to prevent insect attacks. Even the most damaging pest – the red hairy caterpillar found in groundnuts – can be controlled if it is sprayed with this mixture.

Secondly, most of the farmers are going in for composting and quite a good number are going in for vermicomposting. The local worms are best suitable in vermiculture. They are more adaptable and they survive. So, wherever you wash your hands or vessels, there you can see those worms and they are the best.

CA: Is organic farming a very complicated business or is it a very simple business? And what are the main principles that farmers should keep in mind when doing organic farming.

N: The most important aspect is our health, which is the first principle and the basic reason for doing organic farming. Second, we should allow nature to help us. We should not do anything that will hamper the natural cycle like disturbing the soil microbes which can fix atmospheric nitrogen in the soil etc. Third, we should put the agricultural bi-products to different types of use as was being done in the ancient days. Fourth, no waste either within the farm or outside the farm should be burnt because in organic farming nothing is a waste. So called wastes are nothing but misplaced resources. Fifth, we should depend upon indigenous seeds and indigenous cattle breeds. If the farmers are well trained, they can easily go for pure line selection. But it is very important that farmers should not buy seeds from outside. When a farmer buys seeds from outside, he does not have any information or knowledge about the growth of the plant or the performance of the plant. That's why he should use seeds from his own field or get the seeds from other farmers and then sow them in his farm. Sixth, the farmer must realise that the plant is a producer and not a consumer. The plant should not be treated as a consumer. We must enrich the soil and the healthy soil will take care of the plant. All this may look like some complicated process but farmers are able to pick up these ideas quite easily especially if this is discussed in farmer groups.

CA: What are the basic practices you will recommend to organic farmers?

N: First, take care to select a pure line of seeds. Second, collect maximum biomass from the farm and from the neighbourhood for mulching. Third, rear earthworms and release them in the fields. Fourth, go for bio-pest repellants which can be used on a large-scale with no ill effects. Fifth, use panchagavya made from cattle urine, dung, milk, curd and ground nut cake. In Tamilnadu, with the help of Dr. Natarajan, we have been able to improve on the original formula. To the 5 ingredients, we have added 4 more – coconut water, banana, sugarcane juice and toddy. With this addition, we have got 9 components. All the 9 components are able to protect plants, improve the health of the animals and reduce diseases of any kind in human beings. Now we prepare panchagavya from materials sourced to the goat as well.

CA: What is your vision for the coming 2-3 years?

N: First, very intensive work is needed to carry on the campaign:

Organic culture
GMO free India
Farmers seed
Rain water harvesting and millet crops
Urban waste conversion
Protecting water sources
Seed certification
Cow protection

For the above to make an impact a nation wide NGO-cum-farmer network is essential.

Second, to carry out these activities on a wider scale, we need a large number of trainers. So, we have to continually carry out trainers' training programmes and also support trainers who can train people at the local level and at the grassroot level on all aspects of organic farming – cultivation, marketing, preservation techniques and so on.

Organic Farms

VANAGAM

Headquarters:
Nammalvar Ecological Foundation,
60/3, L B Road, Thiruvanmiyur,
Chennai 600 041.
Field office:
Nammalvar Ecological Foundation,
Suruman Patti Village,
Kadavur Post,
Tharagampatti via, Karur Dt.
E-mail and telephone numbers are as follows:-
Nammalvar@gmail.com and sadhguru@gmail.com
Phone Numbers are +91-94425-31699 and +91-94426-24589.

VANAGAM (Heaven on Earth) is a new NGO registered in the name of the Nammalvar Ecological Foundation for Farm Research and Global Food Security.

The new organization will primarily focus on developing ecologically friendly and sustainable agriculture methods. It expects to carry on the Nammalwar tradition of training the farmers all over the country in ecologically and sustainable agriculture methods of farming

The organisation will also focus on traditional medical systems and to create an affordable health centre based on alternative therapies.

As a centre, VANAGAM will do research to bring back our traditional culture and seeds and exchange these with other farmers in India. 'We are in search of permanent solution for not using fertilizers and pesticides in agriculture', says Nammalwar.

The centre will work with indigenous breeds of cattle, integrated pest management solutions and examine how human activities can be made to decrease their contributions to green house gases.

SIVAPRAKASAM

Aranarai, Perambalur, Thiruvalluar District, Tamil Nadu.

Sivaprakasam cultivates on six acres of irrigated and six acres of rain-fed land with assistance from his family and hired help.

Sivaprakasam gives the following reasons for his shift to sustainable agriculture:

He was a progressive farmer in the late 1970s, but later incurred losses year after year such that at one time he incurred an expenditure of Rs.7000 on cotton and got a profit margin of Rs.100 only.

Deeper awareness of the dangers of using too much chemical fertiliser was driven home by the realisation that yields remained more or less the same even though smaller amounts of fertilisers were used (due to price hikes).

He had been looking for alternatives. Having consistently reduced chemical inputs he now has no losses and has finally begun to reap a profit.

Sivaprakasam has been growing onion without fertiliser and pesticides and getting a yield of 260 kilos per 10 cents. He uses organic pest repellent for his brinjal crop.

Sivaprakasam cultivates cumbu, chilies, groundnut, cholam, coriander, red gram, sunflower, onion, sugarcane and rice. In one plot he grows a combination of crops and trees, namely tomatoes, chilies (three month crops), lemon (four years, 20 foot spacing) and moringa (10 foot spacing) with teak and casuarina plants around.

The organic manure needs of the farm are met with animal waste from his cattle. Vermicompost is prepared on the farm and leaf manure comes from Morinda tinctoria which grows naturally on the contour bunds.

Sivaprakasam's future plans include practising a combination of permaculture and organic methods on a half acre experimental plot to explore the possibility of meeting needs of an average family from its produce.

This farmer is the secretary of CAD (Community Action for Development) and believes that sustainable agriculture is the only way to stop the continuous distress sale of land by small and marginal farmers.

(Source: M. Karthikeyan)

G. BALAKRISHNAN

Putharam Farm, Nemam, Thirukkathipalli (via), Thanjavur District, Tamil Nadu.

Balakrishnan is an energetic and inquisitive retired engineer looking after part of the family land. His is basically a tree farm. He has planted a variety of trees and has plans to introduce many more.

When he took up the land for cultivation, it was a sandy upland, created long ago by the overflowing of the river Cauvery. He levelled the land and started growing trees –primarily timber and fodder rather than fruit trees. The trees include teak, eucalyptus, guava, maramalli, gooseberry, etc. He has grown a live fence with trees like subabul and eucalyptus.

This farmer is very particular about using organic matter. He collects whatever organic matter is available in the village and makes it into compost. He is also very interested in microbial action on organic matter during decomposition and has tried two different treatments with two different fungi. One is Plerotus species and the other is collected by skimming the surfaces of water tanks.

He is also experimenting with the ability of fungi and algae present in tubs and other wet surfaces to decompose organic matter in small vessels. The micro-organisms multiply quickly, acting on organic matter (animal and plant wastes) and produce froth. He has applied this microbial solution on the farm to learn more about its effectiveness.

The farmer maintains two adjacent vermicompost tubs and harvests vermicompost alternatively from each of them. He has provided holes for movement of earthworms between the two. When he increases the moisture content in one, the earthworms move to the other for air and comfort. Then compost is harvested from the first pit, thus saving the need to sieve the compost for reclaiming earthworms.

(Source: M. Karthikeyan)

ASSOCIATION FOR RURAL COMMUNITY DEVELOPMENT (ARCOD)

Royakottai, Dharmapuri District – 635 116, Tamil Nadu.

ARCOD is working in rural areas of Dharmapuri District. Its objectives are:

(i) Establishment of collective leadership among poor rural women

(ii) Establishment of development cadres in the villages

(iii) Protection and promotion of natural resources.

Promoting the practice of Organic Farming in the villages is closely integrated into all aspects of their work.

(Source: M. Karthikeyan)

UMESH CHANDRASEKAR AND MEENAKSHI – PUVIDHAM

Nagarkoodal Village, Post via Indur, Dharmapuri 636 803, Tamil Nadu. Ph.: 04342-311641, Email: puvidhamtrust@yahoo.com

Contact: Meenakshi Umesh

Umesh is a mechanical engineer by profession and works part time in the NGO, 'Agriculture Man and Ecology' (AME). Meenakshi is an architect, who specialises in low cost housing. Growing up in Mumbai, Umesh and Meenakshi felt that working in rural areas alone would be sensible and meaningful. Meenakshi was exposed to agriculture in Auroville, while Umesh was motivated after a stint with AME.

In 1992, they invested in 12 acres of land in interior Dharmapuri. The land, located on the slope of a hill, was totally degraded and barren, except for a few shrubs. Since then, over the past ten years, they have planted a number of trees of different varieties and introduced major soil and water conservation measures. Despite the erratic rainfall, the restoration efforts have resulted in regeneration of the land and several trees are now re-growing from the existing root stock.

As self sufficiency was still beyond their reach despite leading simple lives, they decided to buy some more land, this time with a good source of water. In 1996 they invested in an acre and half of land which had some irrigation. However because of the previous extensive use of chemicals on that land it took three years for the land to gradually become productive.

By 1999, the community around were gradually moving from curiosity to conviction that they too could do away with chemical inputs on their land. They had observed that Meenakshi and Umesh had successfully grown, using organic methods only, reasonable quantities of paddy, ragi, wheat, greengram, tuvar dal, black-gram, turmeric, coriander, bananas etc. They used organic methods (neem, chillies, cow urine and anything else they found handy) to deal with the pests.

It was around this time that the city couple, now with considerable experience behind them, decided to transfer their knowledge and philosophy directly to the children of the community (the next generation of farmers). It was also a way of passing on information through the children to the adults who, because they are not literate, cannot read how dangerous chemicals can be, nor do they take necessary precautions while handling them. Adequate education and examples of alternative agriculture are therefore of critical importance.

So, a learning centre which focused on farming was started in 2000. Most of the children who attend the learning centre are from dalit and marginal farmer families. Here they are taught that farming is an honourable profession and that it is possible to make a living from it.

Some additional information regarding the farm:

Crops grown include cholam, cumbu, varagu, red gram, cow pea, green gram, groundnut, etc. The following cropping pattern is adopted:

(i) Samai (July) – Sanhemp and Daincha (October) – Wheat (December)

(ii) Samai – Cholam – Redgram (Samai harvested after 75 days replaced with 'kollu' which helps in controlling weeds.)

Cow pea is grown as intercrop and groundnut is grown as single crop. Fodder and green manure crops include sesbania, subabul and glyricidia, timber such as teak and fruit trees like papaya, citrus and guava are also grown. Vegetables needed for the family are also cultivated.

Seedlings are produced in the farm nursery. Straw for the cattle is bought from outside. Compost is produced on the farm itself. Solar pumpset helps irrigation.

Pest control measures include: (i) Ash and buttermilk (ii) Neem extract application, (iii) Cow's urine, (iv) Chilli leaves affected with virus, ground to powder and mixed with cow urine and applied for viral disease on black gram.

Umesh and Meenakshi live in a house designed by Meenakshi. They use solar panels for lighting and a smokeless choola for cooking.

Puvidham today is an excellent learning centre for children where much of the learning is farm based. The school has grown in size and number. A resident facility for over a hundred children from the villages is presently under construction. Puvidham is presently working on developing a farm based curriculum for children

(Source: As communicated to OIP)

GANAPATHY

Sakthi Farm, Veerapathy, Puliyur Post, Kulathur Taluka, Pudukottai District – 622 504, Tamil Nadu.

Ganapathy lives on a small farm with his mother, wife and three children. He is an innovative, knowledgeable farmer who views each day's activity in terms of energy spent. Hence he does everything with a view to minimising use of energy while at the same time satisfying needs. He has named his farm 'Sakthi'.

Ganapathy practices eco-friendly farming on 2.5 acres of land. He also owns another eight acres in two different places where rainfed cultivation is practiced. The soil is sandy clay with slight alkalinity. Average rainfall is around 650 mm with light showers in July and heavy rains in November and December. No machinery is used on the farm except for a three horsepower pumpset for pumping water, a plough and other simple implements. Work like harvesting and weeding is done manually by the farmer, his wife and mother without hiring outside labour.

Ganapathy decided to practice sustainable agriculture because:

(a) he did not want to spend money on 'poison,' i.e., farm chemicals, as he believes food for a healthy mind and body should be poison-free;

(b) he views every activity on the farm from the point of view of energy spent and so employs all possible means to minimise the workload (this automatically leads to low external input agriculture); and

(c) he envisioned, from the beginning, living in an environment full of trees.

This farmer has cattle. He also has turkeys, guinea fowl, goats, fish, ducks, hens, doves, rabbits and geese, because he is interested in adding to and integrating as many living creatures as possible on his farm. He grows several varieties of trees like coconut, bamboo, subabul, mango, neem, eucalyptus, etc. since he wishes to live surrounded by trees.

The crops include rice and cotton inter-cultivated with greens, okra, sunflower, daincha, gingelly, radish and cluster beans. In a small area, he has jasmine and sugarcane.

On four acres, he grows rain-fed groundnut and pulses along with pulichai in one season, followed by varagu in the next season. This helps him get continuous returns from the 60th day onwards. On another four acres he plans to have mixed forestry.

Farming practices: The following indigenous methods are practised:

a) ash obtained from the brick-making process is spread on the plants in the mornings so that it sticks to the dew-laden leaves;

b) a mixture of five kilos rice bran with one litre of kerosene is applied in the mornings so that dew helps glue the powder to the leaves;

c) neem cake applied during ploughing has an insecticidal effect;

d) natural control by birds attracted to the farm by the numerous trees, especially the fruit trees;

e) in the plot where fish are let into the paddy field (Plot 1) the fish feed on the insects;

f) the mixed crops like sunflower, marigold, okra and tomato prevent the attack of insects on cotton;

g) ducks are let into the paddy field to eat weeds from 20 days after planting upto two months and this normally reduces the manual labour needed for weeding from six people to one;

h) and ducks which are let into the fields to control weeds also feed on insects and their egg masses.

Farm economics: In Plot 6 (.25 acre), cotton is intercropped with nine other crops mentioned earlier, so that all the domestic need for vegetables, greens and pulses are met and some is left over for sale. He also grows many medicinal plants like yellow karisalanganni, white karisalanganni, thuthuvalai, mumusukhai and vallarai.

Innovations: Ganapathy's zeal for experimenting has led him to develop the following innovations:

a) curing 'fox disease' of fish (considered incurable) by using turmeric and neem paste;

b) a two pulley system for lifting stones from the well with a mechanical advantage of 1:3;

c) preventing invasion of his farm by the red hairy caterpillar by adding kerosene to the water in the channel surrounding the field;

d) also using kattukottai and erukku to attract red hairy caterpillars and thereby controlling them;

e) using hot iron rods to burn the side shoots of bamboo so that side growth is arrested; and,

f) maintaining his coconut nursery with minimum effort by using pits along irrigation channels so that separate watering of the seedlings is not needed.

Ganapathy feels that anybody who wants to follow this sort of integrated farming, which involves managing many factors at the same time, should have patience, intellectual maturity and total involvement. He believes that it is a prerequisite that the home is located on the farm and the whole family is involved in the endeavour.

(Source: M. Kartikeyan)

N.S.A. VELU MUDALIAR

4, Chidampara Vinayagar Kovil Street, Puliangudi, Nellaikattabomman District – 627 855, Tamil Nadu.

Velu Mudaliar has 45 years experience in agriculture of which, for the past 15 years he has been practising sustainable agriculture. He is a highly committed farmer with a remarkable inclination to experiment. He and his youngest son look after the farm.

Velu Mudaliar owns about 17 acres of land in the foothills and some in the plains. The land in the plains is leased out while he personally nurtures the trees he grows on the land in the foothills. The soil on his farm ranges from clay to gravel. The uplands have a rocky substratum with meagre surface soil. He has a bore well 275 feet deep which is run on a five horsepower motor and an open well which has a depth of 85 feet.

He also uses water from a neighbour's well, which is pumped for one hour every five days on a share basis. From another well constructed by 15 neighbours at a cost of Rs.1 lakh each and six kilometres away, water is brought by PVC pipes. Each farmer can use the pumped water for two and a half hours, every 15 days. Velu employs 20 permanent labourers with varied skills. Two two-wheelers transport the produce and inputs.

Velu got into organic farming because of degradation of the soil over the years as a result of conventional farming using chemical fertilisers, increasing economic losses over the long-term, and depletion of water sources.

Crops: This farmer grows fruit trees like guava, lemon, coconut, mango, gooseberry and other trees like teak, sesbania, subabul and Nagai.

Guava: He maintains 600 guava trees. The fruit is harvested twice a year. Planting is done in the usual way, but a circular bund-like structure is built around each tree. Irrigation, fertilization, weeding and other cultivation practices are carried out only within the circular structure. It is irrigated once a week normally and twice a week during fruiting.

Compost is used once a year at the rate of 80 to 100 kilos per tree. Small amounts of sulphur are added occasionally. At the appropriate time, pruning is done to induce flowering, to allow greater use of sunlight by the trees and to avoid disease and insect attacks that dense foliage attracts. Practically no weeding is done in the guava orchard.. The farmer also believes that disturbance of the soil by weeding results in more weed growth.

Lemons: Velu has 375 lemon trees. As intercrop, curry leaf is planted. These trees are five years old. As with the guava trees, a round bund is built around the lemon trees and cultivation is carried out only within this space.

Manuring with compost is done at the rate of 55 to 70 kilos per tree. The soil around the trees is loosened once in 45 days. The rest of the area is dug up once a year. Irrigation is once every 15 days. Composting and weeding are done immediately after the rains, in the months of September to November. There is fruit all the year round and harvesting is four times a week.

Velu has another 200 lemon trees in the uplands mixed with teak trees. They are planted as shown in the figure below. Since the soil is rocky and has a lot of gravel, neem cake, 20 baskets of silt and 10 baskets of compost were used in the pits while planting the seedlings. Over the next three years, no fertiliser was added. BHC was applied once to guard the trees from ants. Green leaf manuring was done during the rainy season.

Mangoes: There are also 250 mango trees which are maintained with meagre irrigation and 30 to 35 kilos compost per tree per year. Irrigation is once a month. While planting the mango seedlings, six foot deep pits were dug and a mixture of compost, silt and neem cake was put in them. The rocky substratum has little to offer by way of nutrients to the plants, so they have depended entirely on the contents of the pits.

Farming practices: In order to control ants, termites, etc., a mixture of zinc sulphate and lime is put at the foot of the tree trunk. (Zinc sulphate and lime are dissolved in water until a right mix is reached. The test is, if turmeric powder is applied, it will turn red). Turmeric, varikkampatti fruit (local name) and sulphur are mixed and used to control pests. Spraying with neem oil is done if needed. Also neem kernel extract is applied and neem cake is used (in the soil) when needed. Velu has found an effective method to control insects by spraying the trees with an extract prepared by soaking a mixture of turmeric powder, kadhi soap and garlic for some time.

The plot grown with mango, lemon and subabul was considered unfit for cultivation. But the farmer's determination and perseverance paid off; he has grown the trees with little water and no external inputs. He says the teak grown here is of very good quality.

He has coconut groves on another 11 acres. According to Velu, profit from coconuts is low and the amount of water consumed is high. In the space between coconut trees he has grown guava, gooseberry, mango, sapota, subabul. Irrigation is done through channels. No compost is used for the coconut trees any more. Fronds and other plant material are placed at the foot of the trees which form manure, mulch and absorb rainwater. Nowadays harvesting is not done manually. Only the nuts that fall by themselves are collected and sold.

Rainwater is prevented from running off by the mulch formed by leaves on the surface and the two foot high strong bunds around the field. A 'live fence' of subabul, neem and other trees also helps in soil conservation.

The irrigation system followed in the guava, lemon and mango orchards is unique to this area. The main PVC pipes from the pumpset which pass through the orchards have side outlets. When water is needed, the outlet near the tree in question is opened and a pipe section of the needed length is fixed. This helps irrigate only that tree but the same side pipes are used for irrigating the orchard area. The soaking up of water by channels is avoided by this method.

In Conclusion: Organic farming costs more in terms of labour than conventional farming, because of pruning, manuring, etc. But, according to Velu, the shelf life of organically grown fruit is longer than chemically grown fruit and so one can charge a higher price for the produce. The fruits from this farm last for 10 days on the shelf .

The sesbania on the bunds are allowed to grow into thick poles. Their leafy portion is used as leaf manure. Three year old sesbania poles are sold .

Velu is a pruning specialist. He has succeeded in making his guava trees bear fruit during seasons when the market price is high. He is attempting to get his trees to bear fruit throughout the year through special pruning methods. Disease and pest attacks are the main hindrances to this effort. The farmer does grafting himself and thereby produces the needed seedlings.

(Source: M. Kartikeyan)

P. THANGASAMY

Karpaga Solai, Sendhangudi, Nagaram Post, Alangudi Taluka, Pudukottai District – 614 624, Tamil Nadu.

Talkative by nature, Thangasamy's life revolves around tree cultivation. Whatever the topic he chooses to speak on, he finishes in praise of trees. He emphasises that trees have given him constant income, fodder, leaf manure, good micro-climate and what is more significant, they have made him a virtuous man.

Thangasamy owns 25 acres altogether: 12 around his home and the rest in another place. He has been practising alternative farming for the past 15 years.

The soil of the 12 acres plot is slightly saline with a pH of 7.5 to 8.5. The other plot which had a pH from around 5.0 now has a pH level of 7.5. Average annual rainfall in the area is 600 mm to 750 mm.

This farmer owns cattle and sheep. He also keeps turkeys, geese, ducks and chickens. He feels that it is difficult to practice organic farming without cattle.

Why does Thangasamy practice sustainable agriculture?

a) He incurred a heavy loss following modern farming and so had an economic incentive for the switch to alternate ways of farming.

b) He is convinced that agriculture should be in harmony with nature as otherwise it has negative effects on farm resources, like a continuous fall in the water level of wells.

c) He also believes that soil has life and should not be treated with 'poison' (agrochemicals).

Fodder for the cattle and sheep is grown on the farm itself. He is cultivating nearly 125 species of trees on the 12 acres near his home. As these trees have different physical features like different canopy levels and root lengths, they assist each other and enrich the soil in a wholesome way.

He grows crops like paddy, groundnut, black gram and daincha, in rotation on the 13 acres. Gingelly, chillies, banana, guava, coconut and other fruit trees are also grown. He grows crosandra, sappayru and calophogonia as cover crops, so there is no need for weeding. He also grows about 100 species of medicinal herbs.

Five acres have crops in rotation which includes paddy, black gram and daincha. Coconut is cultivated along with banana, guava, pomegranate and gourds so that income is generated three months onwards from gourds, one to four years later from guava, banana and pomegranate and five years onwards from coconut. These plots are not ploughed.

Thangasamy harnesses the potential of natural agents for pest control. Small tubs are placed in many places in his tree garden so that the birds which come to drink water feed on the pests and leave their droppings. Additionally, he has prepared a solution with plant products like neem cake, erukku (Calotrophis) and kanchara, and keeps it in different places on the farm. Insects attracted by the smell fall into the pots and die. He has not faced any major pest problem during the last five years of organic farming of paddy. He attributes this largely to crop rotation followed on the farm. He believes that daincha and sappayru prevent pest attacks. The crop rotation pattern followed reduces weed growth considerably. Further, the cover crops suppress the weeds. He feels that weeds come up only if the fields are ploughed. If left unploughed, the growth of weeds is very low and workload is reduced.

He has two wells, one on the tree farm and the second, a bore well, on the other farm. The bore well is 300 feet deep and the water level is falling by 10 feet each year. He is therefore forced to use water sparingly. For paddy, he uses an alternate wetting and drying method. In the case of tree crops, the compost helps to retain the rain and irrigated water. He plants trees in long pits of three feet depth and three feet breadth. Crop waste and other plant materials are filled in these pits. When the rains come, not a drop runs off from the pits, thanks to the composting material. It also prevents water evaporation from the soil by minimising direct exposure to the sun. Further, this method enriches the soil as micro-organisms proliferate in these conditions and erosion of soil is prevented.

He has reclaimed his once alkaline land (pH 8.5 to 9) by using coir waste, leaf waste and cattle waste and now the pH is 7.5. He extensively uses compost manure and green manures like daincha, sappayru and sesbania to enrich soil. He also uses bio-fertilisers like Azolla, blue green algae, Azospirillum and Rhizobium. Recently, he experimented by using red gram plants as green manure for cultivating chillies.

Before the changeover to organic farming, Thangasamy's yield was only 900 kilos per acre. Now he gets 1500 to 1800 kilos per acre. When both farms are taken into account, his annual income is enough to meet expenses. Fluctuations in income and occasional losses from agricultural crops can only be offset by income from tree crops like teak, rosewood, etc which he considers a great wealth that he is accumulating for future generations.

He holds the following precepts to be important for the practice of organic farming:

a) Nutrition should be given to the soil and not to crops;

b) Cultivation should be for both, the food requirements of the farmer and for the health of the soil;

c) Crop rotation and mixed cropping are essential;

d) Trees are necessary components of a farm;

e) The family must be located on the farm; and,

f) Sustainable agriculture is practical to the extent that one integrates plants, animals, micro-organisms and other organisms. (Source: M. Kartikeyan)

BHAGYADHAN ESTATE

P.O. Box 63, Kodaikanal – 624 101, Tamil Nadu.

Contact: Arthur Steele

The Bhagyadan Estate is located in the Palni Hills about 20 kms from Kodaikanal. The average annual rainfall is 80 to 100 cms, mainly from September to December. The soil of the area is classified as Alfisols. The land was formerly part of the Shola forest. It is situated in a valley near a river. Three acres of land are planted with coffee bushes and another 1.5 acres are with pineapple. One quarter of an acre is used by the Palni Hills Conservation Council (PHCC) and the Wasteland Development Corporation as a tree nursery. It is managed by Arthur Steele.

The farm is entirely rainfed except when Arthur is establishing young coffee bushes. Then he has water carried to the plants from the river bordering his property. Three women and two men are employed on the farm. He hires more people during coffee picking.

Arthur objects to conventional farming methods using chemical pesticides and inorganic fertilisers and insists that nothing would convince him to switch over to chemical methods. He said that he once used inorganic fertiliser, and saw that it induced lush growth which was susceptible to insect attack. This confirmed his belief that it is not advantageous to use chemical pesticides and inorganic fertilisers.

Farming practices: Arthur's main crop is coffee. He also expects to get returns on the citrus and pepper he has planted. Two acres are planted with variety '795 Coffee', and one acre with catimore. The shade trees which are intercropped with the coffee and citrus include jackfruit trees. Arthur is planning to train his pepper vines up the trunks of the jackfruit trees because he has heard that their bark is superior for this purpose.

Arthur digs crescent bunds for each of his coffee bushes in order to improve moisture and soil retention. This helps the bushes establish themselves. He considers his work with soil conservation and mulching as most important in maintaining soil fertility. Crescent bunding not only conserves soil, but also helps with 'self-mulching', that is, the leaves that fall are retained near the base of the bush. Arthur avoids exposing the soil to erosive forces, by slash-weeding instead of clean-weeding, and thereby returns organic matter to the soil and allows the weeds to serve as mulch. Arthur also applies cow and goat manure to his coffee bushes.

Neither the coffee bushes nor the citrus trees have had any problems with insect pests except for one outbreak of aphids. Kerosene oil and soap were used to counter the outbreak. Fungus in particular the powdery mildew, has been problematic. So far, Arthur has simply clipped affected leaves and burned them to prevent the spread of the fungus. Slash-weeding is used to control weed growth. This means that the weeds are cut at the stem and the roots are left in the soil undisturbed.

Arthur's most expensive input is the cow and goat manure which he purchases from nearby villages. Transporting the manure is also costly. Arthur estimates that it costs Rs.200 for every Rs.500 worth of manure to transport manure from the villages to his land.

(Source: Deborah Rosenstein and Brenna Muldavin)

SAVE THE EASTERN GHATS ORGANISATION - SEGO

104/109 Raja Street, Valaiyambattu, Chengam P.O.,
Tiruvannamalai Dist - 606 701, Tamil Nadu. Cell:
094188291122

K. Venkatachalam, President of SEGO has been working on issues related to organic farming since 1983. He cultivates crops like paddy, millets, oil seeds, medicinal plants, rice, oil etc. The organization conducts periodic campaigns in villages and also exhibitions in schools, colleges and distributes seeds to the farmers free of cost. Nannan Nadu is a monthly bulletin of the organisation.

Extensive tree planting, distribution of saplings of indigenous trees, volunteer awareness programmes have been undertaken by them. His own four hectare, Amritham Organic Farm was converted to fully organic with assistance of student volunteers in 2002. The rich biodiversity on the farm attracts many a students and environmental enthusiasts'.

SEGO has been working on issues related to various environmental issues since 1986. In the year 1997-98, SEGO organised a thirty five days long Seed Yatra (A Roadshow for Conservation of Traditional Seed Varieties) covering a distance of 1500 km and 15 districts in Tamil Nadu to highlight the importance of traditional seeds. The yatra was a joint effort of more than 35 NGOs working in the area of agriculture in various parts of Tamil Nadu. The roadshow helped raise awareness among several farmers and NGOs working in agriculture and the Traditional Agricultural Producers' Association. The Traditional Seed Exchange Network was established as a follow up of the yatra.

(Source: Communication with OIP)

N. CHOKKALINGAM

No 82, Virattipattu, Madurai – 625 010, Tamil Nadu.

Chokkalingam has 20 years experience in farming. He owns 25 acres located in two different places. He cultivates paddy, coconuts and bananas.

The soil is sandy clay. He has five wells and therefore no water scarcity. In the 1995 season, he cultivated paddy entirely by organic methods for the first time.

He switched over to organic cultivation of paddy because over the years using chemical-based methods, both yields and soil fertility were declining. Earlier, this farmer used to get 10 young banana plants around the mother plant but subsequently he was getting only three suckers.

The farmer says all the grains in the panicle of the organically grown crop were full, while those in the chemically-produced crop were only half full. He also found that bananas following the paddy crop had relatively better growth.

(Source: M. Kartikeyan)

KUDUMBAM

No. 17, Highways Colony, Subramanyapuram, Trichy 620
020, Tamil Nadu. Ph: 0431-2331879, 2331842, 2332175,
Fax: 0431-2332175, Email: kudumbamtry@eth.net,

Contact: Oswald Quintal

Kudumbam is a non-profit voluntary organization promoting sustainable agriculture since 1990. Kudumbam also offers home delivery services of its products.

Products available: Rice, Red gram, Black gram, Green gram, Bengal gram, Cow pea, Ground nut, Gingelly, Pepper, Coriander, Chilli, Turmeric, Chilli powder, Coriander powder, Sambar powder, Turmeric powder, Idly flour, Dosai flour, Nutrient flour, Ragi flour.

Kulinji is also the ecological research and demonstration farm cum training centre offering training in integrated farming systems, animal husbandry and nature cure.

Trials, experiments, demonstrations, trainings and farmers' interactions are the main core programmes. It is located on 35 acres of rainfed land in an interior area of Kulathur Taluk in Pudukottai District.

It can provide seed, seedlings and saplings.

(Source: Brochure)

Interview with Sundararaman

Claude Alvares: Could you tell me about your farming experience when you began?

Sundara Raman: This farm is my ancestral farm. Though we are Brahmins, our basic work has been agriculture. Initially, I had about 50 acres altogether. Severe drought conditions existed in our area at that time, year after year. Against this background and due to these conditions, I first sold off 10 acres of land, keeping two other properties with me. In 1982, again severe drought conditions set in. The well on the second property went dry. It was 50 feet deep. I went on digging up to 100 feet...then, trying vertical bores, we went up to 200 feet. Underneath there was pure black rock-granite.

So, it was no use investing more money in that land. But I held on to it. Whenever there was regular rainfall I cultivated. Otherwise, I kept the land fallow. In 1988 I sold that land also. I tried my best to survive with the balance land. I hoped we could have some good times and that I could save, that we could live well. But everybody has his limits and I reached mine. Eight years ago I was forced to sell that land too.

CA: How are you farming now?

SR: Now I am working on 13 acres of land, but it is not my property. It is my brother's property. My brother and his sons are in a higher income group and they are earning well. Since I am sincere they also take care of my family. I do not give them any rent, but if I make extra money then I give them something.

CA: Are these thirteen acres profitable?

SR: Usually we make ends meet. The investment and income are at par. I live comfortably. So do my workers-about 15 families.

CA: When you began your farming operations, what was the cropping pattern?

SR: In traditional farming, we used to grow two grain crops and one commercial crop. Either jowar and ragi or bajra and ragi; then tobacco...or paddy. This was the pattern of rotation. During the last 30-40 years we have been growing turmeric as a cash crop. Earlier, chillies and cotton were the cash crops.

CA: Were these two grain crops and the cash crop for self consumption, fodder and also for sale?

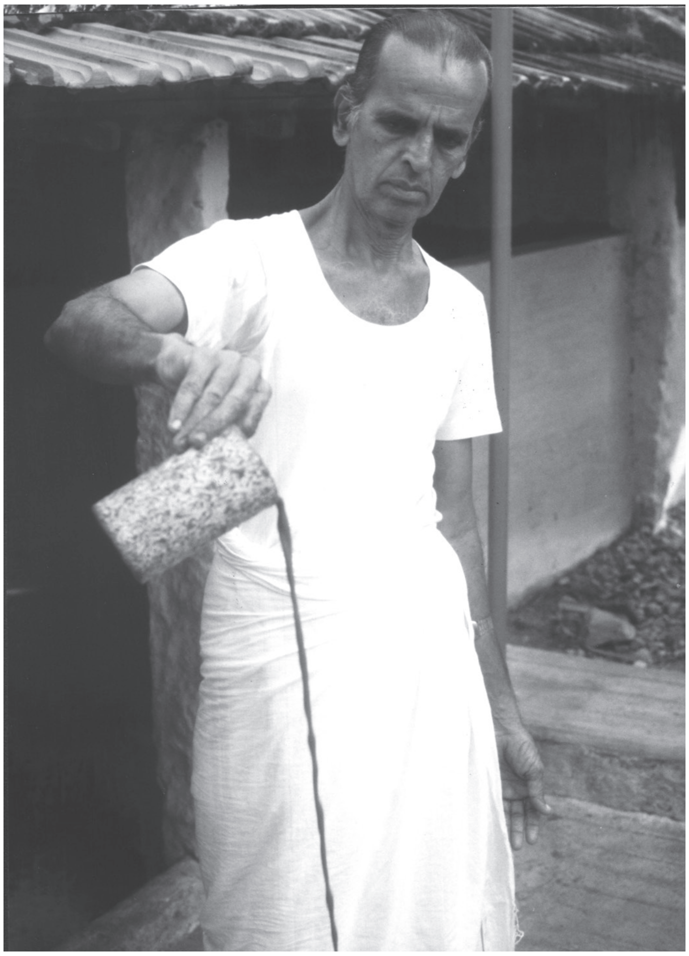
SR: Yes, for all three, but the amount for sale was very nominal. Because, previously, we gave salaries to the farm workers in the form of grain. But, this has changed in the past decade or so. Now we have only cash transactions.

CA: What about fertilizers?

SR: The collection of farmyard manure is very costly. If a farmer wants to have farmyard manure he should have cattle, if he wants cattle he should have fodder crops, if he grows grain crops it becomes uneconomical for him...the chain grows... In this situation, he needs money to maintain his investments in agriculture andalso meet his needs.

CA: But if farmers are using HYVs they have to use chemical fertilizers because these are responsive to chemical fertilizers only and not so responsive to organic nutrients.

SR: That is not completely true. HYVs are responsive to organic fertilizers as well, because you are increasing the fertility of the soil by using farmyard manure. So it co-operates with your planning. And you can reduce the quantum of chemical fertilizer by 30 to 40 per cent even in the case of HYVs. But the cost goes up.



Sundararaman preparing microbial solutions for his farm

So, if a farmer tries to apply farmyard manure, he should not calculate the cost of this organic manure in the cost of cultivation. If he includes it, he won't show profit. A farmer should cultivate that sort of attitude. Then only he can improve his soil. Otherwise, if he is only cost-oriented, he will not bother about whether the soil is fertile or not. He will go on using chemical fertilizers.

Another important factor I have discovered is that if you use inorganic material or artificial nutrients only, the crop grows artificially because you have killed all the soil microbes and pests and diseases may come in. Whereas in organic cultivation, everything happens naturally. Once the soil microbes increase, the conversion activity also increases and there is growth, thereby the leaf surface increases. When the leaf surface increases, the harvesting of sun is more, and production is higher. In inorganic farming the leaf growth is not much; in organic the leaves are broader and bigger in size than inorganic.

There is one more thing in agriculture. There are two types of irrigation. One is from wells, the other is with river or canal water. In the latter case, the fertility of the soil will not be affected much with continued use of chemicals because with seasonal rains you get light silt deposits through the canals. But there is a problem with well irrigation. The water is from underground where there are some salts which are brought up. This increases the salinity of the soil. So, to reduce the salinity, well-irrigated fields must have farmyard manure. Otherwise the fertility of the soil will keep decreasing.

Whether he likes it or not, the farmer who uses well irrigation must use farmyard manure for his soil, at least once in three years. Otherwise he won't get profit. Farmyard manure is a must. Now people are using alternatemethods. They have caged poultry from which you get good manure. It is very high in nitrogen phosphorous and potash. Apart from that they feed the birds micro-nutrients, so those too come with the waste.

People are now coming up with bio-fertilizers. But even the bio-fertilizers won't work if the soil is dead. To revive it you have to apply farmyard manure.

CA: How did you changeover from chemical use to natural methods?

S.R: I was getting very good yields of turmeric in the early stages but slowly the crop got nematode and rhizome rot. I started pouring chemicals into the soil. Its efficacy dropped sharply, eventhough I put in 250 cartloads of farm manure. Then I realised that I had killed all the living things in the soil. So I started thinking about using traditional agents and methods like neem seed powder, neem cake, letting the soil rest for two or three months, or growing leguminous crops like gram or pulses. This process of reviving the soil took me five to six years. Now it is all right. Now I totally avoid using chemical pesticides and fungicides, and I am trying to tell other farmers not to use granulated chemicals like the fungicides Thimet and Furadan. They kill the living organisms in the soil completely.

Similarly, mercury compounds, like Emison. It is very effective against all root zone diseases, but it is also very, very poisonous. Mercury has very high residual toxicity.

CA: Is it easy to practice traditional agriculture?

SR: There are practical problems in practising traditional agriculture. Advance planning must be done. Take the case of neem seed for example. You must powder the neem seed and soak it in water for 24 hours; you must prepare it for three to four days before you spray it. Similarly in the case of dusting with turmeric powder, ash, neem seed powder, tobacco powder, etc. you have to dust the plant at three to seven day intervals, two to four times, according to the pest infestation. You must start the work early in the morning and finish it in one and a half to two hours. For this you need two to four people in the morning to work quickly and dusting should be uniform. It is only possible if you have labour. Because of such problems, farmers are reluctant to adopt these methods. Whereas with chemicals you just go to the shop and buy them, spray them and it's finished.

CA: Are there any special tactics that you have come up with in order to deal with pests, without using chemicals?

SR: In order to confuse the pests, we are first of all having a multicropping pattern. In a plot, we try to have many crops - some may be short-term and some long-term. Accordingly, the plants are spaced while planting. Multicropping is a very good tactic for reducing the pest nuisance.

We also follow alley cropping. At regular 15-20 metres intervals, in the east-west direction, we sow jowar, maize and bajra in alternate rows and therefore every portion is completely isolated. The pests are attracted to crops by smell only, so the different species will prevent build-up of the pest population.

Then we have live fence in which there are three of four crops - glyricidia, castor, acacia/agathi and chembai. We plant these on the four sides of the plot. These come up quickly. The pests go to this live fence first and are thereby prevented or controlled from going to the crops.

If a farmer grows vegetables or cotton, then after every 6 rows, we ask the farmers to sow one row of pulses - cowpea, black gram, red gram, horse gram.

All pests first settle for the peripheral plants and leave the main crop. At the same time, predators know where their prey dwells and attack them. One catches the other. Thus the biodiversity is also maintained. Alley cropping and the pulses crop slow down the pest attacks. These are the natural methods being adopted.

CA: Are these methods to be adopted irrespective of whether or not you have pests?

SR: These methods of pest control are done in a prophylactic way. In the inorganic system you wait to see the yield of the crop, then only you spray chemicals. Otherwise, you postpone the activity. It is called the Economic Threshold Level - ETL. That is not the case with us. Here everything is prophylactic. According to the season, we know which type of pest or fungus will come. Accordingly we design. Pre-planning is a must. Similarly, for preparation of plant extract you also need a minimum 20-day plan, then only you can do things systematically.

All the organic farmers have switched to prophylactic spraying using only plant extracts and growth promoters. We grow, on the farm itself, those plants whose leaf extracts we use in pest control. Earlier, it was suggested to spray plant growth promoters separately and plant extract as repellent separately. In this way the work was doubled and I wanted to avoid that. So I started to mix growth promoters with plant extract. But you cannot give the recommended dose for the crop. For example, if you spray panchagavya separately, you have to take 1 litre for 50 litres of water i.e. 200 ml for 10 litres of water. If you take only plant extract, 1 litre of extract can be sprayed in 10 litres of water. When you combine both, the concentrate of the liquid increases. So to be on the safer side, you have to reduce the dosage. That we decide according to the plant. If you need plant growth at a particular time, we use the plant growth dosage in full strength and reduce the extract dosage in half. For example, if you use panchagavya it will be 200 ml and the plant extract will be half a litre only. Whereas if the pest problem is more and growth problem is not, then we will use 1 litre plant extract and reduce the panchagavya to 100 ml only.

CA: How do you explain all these ideas to the farmers?

SR: Depending on the various conditions, various location specifics and various crops, I regularly visit the fields and advise the farmers and explain to them why I am adopting a particular method. I also ask them to communicate with me on telephone any problems or changes they notice. Thereby I gain their confidence to suggest to them what to do.

For the past 35 years, in inorganic farming, people had been given chemical dosage and pesticide dosage. For any problems they had been given a package of practice by the agriculture extension department and have grown accustomed to it. So if you start telling them basic, fundamental principles and if you ask them to adapt them to their fields, they are not ready to do it. They are not ready to apply their minds at all. They want the easy way. So I have to be somewhat aggressive too. I ask the farmer if he wants immediate results and making various types of combinations I suggest to him what he must do.

I have to conduct constantly field-level trials. For banana, turmeric and paddy, a minimum of 5 to 8 trials are required. If I go during one season to a place, I teach the farmers there everything so that they know what to do and what not to do. Then I won't go there again. During the time I am there they can ask me anything and I will help them. Whether he is a big farmer or a small farmer, it does not matter because if the message gets there, it must be executed and we must get results. This is the only way to propagate organic methods among the farmers.

CA: What is your opinion about biological pest control and have you tried it?

SR: Yes, I am combining that also. Biological control is a must. For example there are 3 kinds or categories of caterpillars - egg-eating caterpillars, larvae-eating caterpillars and insect-eating caterpillars. You have to release the appropriate larvae in the fields in order to get desired results. I have a close tie-up with John, Ammapettai, Erode district. I ask John to contact the farmer and instruct them how to use the appropriate method. He then follows up to see whether the farmer is doing it accordingly. This type of coordination between us creates awareness among the farmers who are in touch with us. This builds confidence and they follow our suggestions. If you do these methods in the beginning only, combined with release of predators, you get excellent results.

CA: Can you spray pest repellants simultaneously with release of predators?

SR: Yes. First, I spray the plant extract then after one or two days, I release the caterpillars. Pests which are harmful to the crops, are all vegetarians and pests which are predators, are non-vegetarians. The vegetarians have antennae and with the help of these, they can smell the leaves and start eating them. The predators are not bothered about the smell, they just go in search of prey. Another good reason for using this combination i.e., spraying first and then releasing the predators is, after spraying, the harmful insects' activity slows down and since they are very sluggish in nature the predators find it easy to catch them and eat them.

CA: So according to you, there is no need to use even 1% chemical pesticide on farms.

SR: Yes definitely. Even in severe conditions, I tried these measures and had good results. I have 100 per cent confidence now to make recommendations. I can give you one example. I have a close friend of mine, just 3 kms from here. Last year, he planted one acre of paddy. I suggested to him to do it my way. I said, I won't come to your place to see the crop and you don't communicate to me what is the state of the crop, don't tell me anything. At regular intervals I will tell you to do certain things, spray certain things. Just do it and if you suffer a loss, I will bear it. About 15 days before the harvest, Narayan Reddy and I happened to visit the farm. I showed him the crop. Everything was fine. The farmer also was fully satisfied. This I could achieve because I have experimented in various-conditions. I also have previous experience with inorganic cultivation, so I could foresee what kind of problems would be there, at what stage they will come, and so it was easy for me to assist him on what to do. That is my experience with planned production.

CA: What methods do you practise on your farm?

SR: Here I have two main crops, one is sugarcane, the other is banana. The side-income crops are sespania and agathi. Another advantage is that these two are leguminous crops, they store nitrogen in their roots. Both banana roots and sugarcane roots mingle with these roots and take the nitrogen stored in the plants and use it. So we call these 'companion' plants. In this case, sun harvesting is uniform for all crops. One is not disturbing the other - that is an important factor. This is Dabholkar's Method. His basic system is that the resources can be built up in the plot itself. For each and every crop you can build up organic resources there itself. Thereby you can avoid the external inputs. For that he gives the principle. Here it is a partitioned area. If I grow sugarcane as a mono-crop, I have to use 20,000 sets per acre. Since it is partitioned area, you will get 8,000 sets only. What I have done here is I have taken 10 ft. x 10 ft., centre to centre, E/W and N/S direction, and a 3 ft. circle plot around it. First I made circled plots with 10 ft. x 10 ft. basis. In this way I made 250 plots in the partition. As I told you, for partitions 8,000 cents are needed. If you calculate 8,000 divided by 250 gives you 32 cents per plant. So instead of sowing it throughout the area, (250 plots x 10 sq. ft. equals 2,500 which is one fifth of the area in partition) i.e. in 32 cents, I have planted in one fifth of the area and have four fifths of the area in my hand.

CA: So, by this method, you are planting the same amount of sugarcane plant on one fifth of the area only.

SR: Yes. The basic concept is to create the biomass there itself and use it for the main crop. So in between four plots you have one centre plot. In this plot I have planted banana. By that method, I have 150 banana plant plots. Both put together i.e. sugarcane and banana, I have one fifth of the area with the main crop and in remaining four fifths of the area in the early stage I have grown 5-6 varieties of vegetable plants. After harvesting, all the biomass is given to sugarcane and banana.

Once again, you have left over a big area which is vacant. There I have sown a multiple variety of seeds. That's the second mulch. Fifty days I take it out and give the biomass back to the sugarcane and banana. Again in the leftover plot, the sugarcane waste is given back to the plot as biomass. At every stage, at regular intervals, we are giving back to the soil biomass - this is the secret. So from both these areas you are getting income as well as biomass.

With each and every irrigation, I use cowdung slurry and I use, one at a time, cow's urine, panchagavya or buttermilk-coconut milk solution, in rotation. So I am not spending money, but I am feeding micro-organisms and thereby microbial activity enhances and microbial population enhances. The micro-organisms then quickly digest all the biomass that is applied and thereby the main yield is improved.

I can give you the calculations. I have 30 canes per field. So 250 x 30 = 7,500 canes. Let us take 1 kg. per cane. It comes to more than 1kg, but let us take 1 kg. So it works to 7,500kg or 7.5 tonnes. The sugar factory gives Rs.826 per tonne. After deducting cutting and transporting charges of Rs.150, this comes up to Rs.650. 650 x 7.5 = 4,550 through sugarcane income. I also have 150 banana plants. I sold these at Rs.50 each and I got Rs.7,500 from banana plus 4,550 from the sugar. So that's around Rs.12,000. Then I have 500 poles. For each you get around Rs.2. I have not taken the income from vegetables into account. If you reduce the total amount to Rs.10,000 per 40 cents. Per acre, you get Rs.25,000. So it is good business sense also.

CA: Could you explain to me what you were saying about panchagavya creating a certain population of microbes because of the nutrient mix which you can increase 2 or 3 times?

SR: You add this archae mixture - slurry with panchagavya, slurry with archae, slurry with buttermilk-coconutmilk. Slurry is important because the basic feed of all microbes is cowdung. Microbes grow well in slurry solution. Best is gobar-gas slurry because the methane is released. If you don't have gobar-gas, take 50 kgs of cow dung, mix it with 100 litres of water, keep it for a week, all the methane will be released and then it is ready for use. If you put any microbes in it keep it for 24 hours, the population will increase.

CA: What is 'archae'?

SR: It comes from 'archaeology'. Before living things come first there exist the microbes. Balakrishnan named it that way.

CA: How do you get archae?

SR: Balakrishnan came here and stayed for some time. He designed the plant, so to say, in which you can prepare archae. You take about 50 kgs. of cowdung, mix it in 75 litres of water and pour it in a barrel or a large jar. Then take 100 gms of ferrous sulphate and mix it in 2 litres of water and after it dissolves completely, pour it in the barrel. Then you take about 20 litres of water separately in a plastic container, put 3 kgs of sugar or jaggery, 250 gms castor oil and 100 gms yeast. Keep this separately for 3 hours, during which time the yeast which you have added will start working. Every 15 minutes you have to stir the mixture well since the castor oil won't naturally mix with the water. The activity of the yeast makes the oil soluble in water. After 3 hours, you pour this mixture into the barrel.

If the barrel is not full, add water to it till it is completely full and becomes anaerobic. The archae works in anaerobic conditions and digests the cowdung slurry inside and new nutrients are formed. Seven days later, you remove it and boil it in a container. During boiling, all the microbes, both beneficial and non-beneficial, die and you will get a sterile solution. After cooling, divide it into five equal parts and put it in separate containers. In each one, you use pseudomonas, t. viridi, bascillus subtilus, t. harcianum, and pycillomycis, 200 grams each and put it separately in each container and keep it for 24 hours. In 24 hours, the contents will build up ten times. So if you use 200 grams, after 24 hours you will get 2 kg. You need to use only one fifth, so this activity can be shared by farmers, thereby reducing the cost. If you use it for 3 years, then it is not necessary to use it afterwards because the soil gets everything on its own and as long as you regularly give biomass to the soil it is enough, the rest will take care of itself.

Once a farmer asked me, how will you use it. I answered that I will once again use 100-200 units of gobar-gas plant in which I will put this built-up solution, keep it for another 24 hours and again those microbes will feed on the slurry and multiply. The next day during irrigation, I will use the complete solution in water. Immediately the farmer said: You boiled the archae and killed all the microbes, and now you are once again mixing it in slurry. In slurry you again have beneficial and non-beneficial organisms and will not the non-beneficial organisms destroy the others. I answered, since the population of the spores is at a very high level, they will suppress the others. To reduce competition, we keep all the micro-organisms separately and they will grow freely. These basic things were taught to me by Balakrishnan, who also helped me to gain confidence.

CA: Have you heard of this new technology called EM - 'Effective Microorganisms'? It is developed by a Japanese professor.

SR: Yes, I have. I prepare extended EM (EEM), treated cow urine (TCU), bokashi, and fermented plant extract (EMFPE). Above preparations can be used for spray as well as in irrigation. To rectify micronutrient deficiency, we use EMFPE preparation. For this various types of leaves are used. Waste fruits, the waste material removed from the intestines of cows and goats are also used.

GOMATHINAYAGAM

No. 18, Ulchi Magaliamman Koil Street, Puliangudi, Nellaikattabomman District – 627 855, Tamil Nadu.

Sri. Gomathinayagam is an organic farmer from Puliyangudi village in Thirunelveli district. Gomathinayagam, aged 75, once a teacher, has been in farming for three decades. He and his friends have started a farmers' sangam in his native village where they meet every evening. Through the sangam they subscribe to over 20 journals and magazines which they read to understand the world. He enjoys commenting on any social event through a post card, which the newspapers publish now and then. His entire family ie. his wife, two sons, daughters-in-law and grand children are all involved in farming. He decided to stop education of his sons at the 10th standard as he felt that they don't need more of this kind of education.

On the education system, he comments as follows: 'Most of us spend enormous money on providing higher education to our children. Tell me, where has this led us to? Why should children be educated so much that they start to look down upon the mainstay employment of this country? Today, only those who do not fit into the mainstream or are not good enough are supposedly attracted to farming. Who has created and sustained this view? The educated public? And what do they know? They have neither the independence of economy nor of culture. In both they are slaves.'

He gives the following recipe for the use of panchagavya:

Take 5 kg of cow dung and add one litre of ghee. Then mix them well and keep in a shady place for five days. On the sixth day, mix to this three liters of cow's urine, two liters of cow's milk, two liters curd, three liters tender coconut water and three liters sugar cane juice. Put the mixture in a shady place for 15 days. Everyday mix it well, morning and evening. After 15 days it will be ready for use. Add five liters of water. The ratio is 3% (3 liters of panchagavya for 100 litres of water). Panchagavya can be used for all crops before flowering and after. Sri. Gomathinayagam uses panchagavya for paddy twice – first on the twentieth day after planting and again on the fortieth day. It acts as manure and pesticide. Besides, panchagavya increases the shelf life of rice and improves its taste as well.

(Source: Communication with OIP)

KHORAM ESTATES

'Fleurette,' Sivanadi Road, Kodaikanal – 624 101, Tamil Nadu.

Contact person: Minoo Avari

The Khoram Estate was purchased in August 1980. It is located 16.3 kms. from Kodaikanal, in a valley called Middle Palnis. The nearest town is Perumalmalai which is five kms. away. The property is around 4,000 feet above M.S.L. To the north, it overlooks the plains of Palni. West are the hilly massifs which form part of the Anamallai tract while to the south one can see the extreme boundaries of Kodaikanal Municipality.

This area is therefore essential for access into the hundreds of acres of land available for sale in the north. The lands there are as gentle as they are fertile. The panoramas they afford are as exquisite as their myriad hidden mysteries. These magnificent lands are the last remaining portions that are up for sale by farmers.

The Estate came with seven acres of Arabica 795 coffee variety, fourteen acres of citrus and other trees on its total twenty-five acres. The water is abundant, and it is potable. In 1986 one acre of the new, high yielding imported dwarf variety of coffee, known as Catimore, was grown. In 1988 a further four acres were planted and the programme completed in 1989 with a balance of six acres.

Coffee planting was accompanied with citrus planting at 20 by 20 feet spacing. Temporary shade trees were also grown at 15 feet intervals and followed each year with permanent shade trees at 60 feet spacing. All the newly planted areas were first thoroughly dug up. Unearthed rocks and stones were used to put up massive revetment walls. A 1,50,000-gallon seepage tank was constructed over a period of four years.

Pepper was grown on a commercial scale from 1987 after trials were conducted to find the most suitable hybrid for this area. There is little doubt that this is the crop of the future. Requiring no maintenance, it is easy to harvest and is harvested at a time when there is plenty of labour available, i.e., after the coffee and citrus harvests are completed. Yields on a single vine have been upto 120 kg green /40 kg of black pepper!

The eastern (top) section of Khoram Estate has been ear marked for setting up an eco tourism complex. It will harbour, in addition, a cattle shed with attendant gobar gas plant which will supply milk, lighting, cooking gas and slurry for the orchard below.

The climate is ideal for agriculture. It has been rated as excellent for dairy and/or stud farming. It has now been internationally acclaimed as having that perfect ambience for a world class health spa. The weather pattern lends itself to making the area more than suitable for alternate energy resource projects.

Khoram Estate has the distinction of being amongst the highest yielding coffee properties anywhere in the country. It also sports a wide variety of produce and plants. To name a few:

Cinnamon, leechis, mangoes, peaches, apricots, avocado, bananas, chillies, vegetables, Monstera deliciosa, pomegranate (seedless), arecanut, guavas (seedless), citrus (oranges, mosambi, kedar narthangai, grapefruit, Salem orange, sweet lime and acid lime), kadukai (soap nut), nellikai, jackfruit, jambool, laquaat, African mahogany, albizzia, singattu, Grevellia robusta (silver oak), white cedar, vangai, kona, kumul, croteleria (Indegofera Tasmania), rosewood, athi (wild fig), kelaa, oapaya, custard apple, vaikalli, Mysopsis emminni and Dadaps.

Several hundred imported silk-cotton hybrid plants have already been planted along the estate perimeter. Again, every tree that is large enough has a pepper vine on it.

The estate is now totally organic. By using stone walls and allowing soil to build up as well as transporting large quantities manually they have recovered several acres of waste land, which have since been planted such that the major part of the estate is now covered with trees. Research trials with the highly successful Vetticelium were first conducted on this property.

Applications of BD 500 and compost etc., are all that the estate requires and though the crop levels per acre have dipped, the quality is far superior with individual bean/fruit size much greater than before. In addition the shelf life of perishable products has been considerably enhanced.

In conclusion, it must be noted that Khoram Estate is chemical free. It is totally organic and follows a self-sustainable eco-friendly pattern interlinked with highly scientific principles.

(Source: Communication with OIP)

ANNAPURNA FARM

Bharat Nivas P.O., Auroville – 605 101, Tamil Nadu. Ph.: 0413 3155660, Email:brooks@auroville.org.in

Annapurna farm is managed by Tomas, Andre and Brooks. This 135 acre farm belongs to the experimental international township called Auroville, near Pondicherry. The primary purpose of the farm is to produce food for the residents of Auroville.

The farm is presently growing approximately 5 acres of paddy, and around 35 acres of millet. Only indigenous crop varieties are used. The millets grown are barnyard millet (kuderaivalli in Tamil, sanwa in Hindi) and kodo millet (varagu in Tamil, kodon in Hindi). There are also some tamarind plantations, and plots of casuarina trees. The farm also grows Hibiscus sabdariffa, or Rosella. The fruit of this crop is dried and used for juice production in Auroville's solar kitchen.

Annapurna has a dairy with 10 cross bred cows. Indigenous animals are preferred, so the farm is presently raising two pure Gir bulls which will be used for breeding as well as for local transport.

The performance of rice has been very disappointing at Annapurna, with yields averaging only1,200 kg per acre. The poor yields may be due to increasing concentrations of salt and the increasing EC in irrigated plots. It also may be due to the high pH of the soil, which is between 7.8 and 8.2, depending upon the depth. The system of rice intensification (SRI) is being tried on some small plots, however the performance of SRI plants in the first year was very disappointing.

Millets grow well here, but consumer demand for such crops is low in Auroville.

The farm depends heavily upon donations for its existence, as production related and operational expenses are greater than income from the crops.

Much effort is devoted to recording and analyzing data of the production processes.

Rainwater harvesting ponds have been created with catchment capacity of approximately 24,000 cubic meters. These ponds, when filled, provide irrigation water for the rice crops.

(Source: Communication with OIP)

KOLUNJI FARM

Kudumbam, Ezhil Nagar, Keeranur, Pudukottai District – 622 502, Tamil Nadu.

This farm was established by Kudumbam, an NGO, in 1992. There are five families living on it and looking after the activities. At the time of purchase it was barren land. Thanks to efforts at water harvesting and planting pioneer trees, the farm is now well wooded.

Some good practices demonstrated on the farm are:

a) Water Harvesting: Starting from the highest part, water harvesting is done in various ways, like contour bunding, percolation pits, deepening of ponds, etc. so that rainwater is fully harvested.

b) Regreening: Plants which are native to the place and which survive in difficult conditions – pioneer plants – are grown, to bring green cover quickly to barren land.

c) Soil conservation: Soil erosion is controlled by contour bunding and vetiver.

d) Stone mulching: To make trees grow with rainwater only – even when rain is erratic –stone mulching is done around the tree trunks. This helps retain moisture.

e) Shelter belting: Part of the farm is left undisturbed so that thick bushes establish themselves. This acts as a shelter for many creatures like mongoose, peacocks and birds which become part of the natural system of the farm.

f) Alley cropping.

g) Deep litter system: To maintain birds for food.

h) Aquaculture: Rearing fish in rainwater-fed ponds.

i) Permaculture: At the lower end of the farm, where there is a well with a pumpset, a plot of land is cultivated with the permaculture methodology. Tree crops include sesbania, subabul, fruit trees like guava and trees like teak. Vegetables and tapioca along with cover crops are also grown here.

j) Home Gardening: This is propagated mainly to look after vegetable needs of the home in poorly rainfed conditions.

Kolunji acts mainly as a training centre for NGOs and farmers.

(Source: M. Kartikeyan)

SUGAVANAM (MEDICINAL PLANT CONSERVATION PARK AND PEOPLE'S AGRICULTURAL FARM)

27, Ayyanar Nagar Pudukkotai – 622 303, Tamil Nadu. Ph.: 04322-265094/266613 Email:paf@eth.net

Sugavanam is a Medicinal Plant Conservation Park (MPCP) established with the financial and technical support from Foundation for Revitalization of Local Health Traditions (FRLHT), Bangalore. It is conserving the medicinal biodiversity of Pudukkottai district and trying to revitalize local health traditions. There are 500 species growing in natural conditions. They maintain a herbarium of 300 species in a very systematically maintained space.

Present Activities:

1. Watershed Training:

Sugavanam is part of a micro watershed which was developed from 1990–1996. The impact of soil conservation and tree planting can be seen clearly. People who want to learn the impact of watershed components on degraded lands come for an exposure visit here. A comprehensive training on watershed approaches and soil conservation and tree planting techniques is offered here.

Sugavanam medicinal plant park and nursery

2. Organic Farming:

Training in organic farming including composting techniques is offered to farmers' groups. Sugavanam has become a thick forest and wherever some sunlight is available organic trial beds have been formed and demonstration crops raised. Various organic manures and natural plant based pest control measures are taught and demonstrated.

By the promotion of organic agriculture we wish to supply poison free food to the urban population. Through an alternative marketing system, it is hoped to bring producers and consumers together to develop mutual confidence and concern.

3. Nursery:

A well designed nursery with a capacity of 1,00,000 seedlings is functioning here. Besides medicinal species required for a home garden, agroforestry plants are also raised and supplied on demand. About forty to fifty species are available always.

(Source: Communication with OIP)

ALI MANIKFAN

Do Nothing Farm, Madapuram, Vallioor, Tirunelveli Katta
Bomman District, Tamil Nadu.

Ali Manikfan is a multifaceted man and has proved his mettle in fields like astronomy, fish species collection and identification, electronics, alternative technology, ship making, etc. along with natural farming and natural cure. He started following natural farming some 20 years ago. He has found a way of preventing sea erosion at Rameshwaram when he lived there on a small farm. He runs all the electric instruments in his home by harnessing solar and wind power with an indigenously made fan.

(Source: Communication with OIP)

ECHO TRUST

M Vadipatti, Dindugul Anna District – 624 211, Tamil
Nadu. Ph.: 045436-4404

Contact: Muthusamy

Ali Manikfan is an organic farmer

ECHO Trust, an NGO established in 1985, has from 1991 initiated activities related to agriculture. The trust has 85 cents of land in M.Vadipatti. Fruit trees like guava and mango are grown. Ploughing and weeding are both avoided and the area is left undisturbed.

ECHO Trust is involved in organic farming promotion and campaigning.

(Source: M. Kartikeyan)

GLORIA LAND

Sri Aurobindo Ashram, Pondicherry – 605 002, Tamil Nadu.
Ph.: 0413 2666337, 2339017, Cell: 094432 87531, 094432
72780, Email: glorialand@sancharnet.in

Contact: Manager

Spread over 40 hectares (100 acres), Gloria Land dairy farm has been a pioneer in organic farming. Realising the ill-effects of chemicals and pesticides way back in 1967, Gloria Land persisted with organic techniques all through the halcyon days of the Green Revolution when the usage of chemicals was proclaimed as the best way of farming. The dairy is an integral part of the farm, with nearly 120 heads of cattle mainly of Indian pedigree. No vaccination is given to the animals. The average milk production is 325 litres per day. Approximately 250 kg of cow dung is used in the biogas plant. Slurry from biogas plants is used as manure. Approximately 15–20 acres of land is used for rice production with an average yield of 40 tonnes per crop.

Gloria Land aims at self-sufficiency in organic farming. The primary motive being to stop the input of chemicals into the system which comes through cattle feed purchased from the market. The crops are therefore dairy oriented, so that some of the products and all by-products can be effectively used as feed for cattle.

Groundnut, maize, cumbu, ragi, soybean, jowar etc. are some of the crops grown. Also coconut, mango, sapota, guava and papaya trees are grown. A number of vegetables are cultivated. Honey is provided by beehives.

Gloria Land makes special efforts to promote research on native varieties of plants with the use of biological, low tillage or no-tillage mulching methods and the harvesting of air and sunlight which is a new concept in organic farming. Innova-

The beautiful animals of Gloria Farm, Pondicherry

tion on the irrigation front is also a continuous process. The results have been very encouraging. The work being done at Gloria Land has been acknowledged internationally and articles on the farm have appeared in newspapers and magazines in India and abroad. The late Manindra Pal, the genius behind Gloria Farm introduced several people to organic farming, including Prof. Radhamohan of Orissa. The farm is now managed by his daughter.

(Source: Communication with OIP)

LEISA NETWORK

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District office:

LEISA Network – Madurai, Post Box No. 87, Madurai – 625 020, Tamil Nadu. Ph.: 0452 2533493, Email: pardmdu@eth.net / leisa_madurai@hotmail.com

Resource Poor Farmers (RPF) around the world have been marginalized and excluded from development with the unbridled spread of the 'green revolution'. LEISA Network has been an initiative of farmers (and farmers eco-clubs) to counter such threats to life and livelihood.

LEISA Network comprises of a coalition of 82 NGOs and over 2000 resource poor and landless farmers spread across nine districts of Tamilnadu. The State Resource Cell, based in Trichy, provides financial support and technology updates while the district level leading NGOs have been assigned the responsibility to monitor and oversee the program. Headed by district coordinators, all the district level activities are steered by field executives along with participation and cooperation from the farmers and animators.

(Source: Brochure)

SHRI A M M MURUGAPPA CHETTIAR RESEARCH CENTRE (MCRC)

Tharamani, Chennai – 600 113, Tamil Nadu. Ph.: 044 2430937, Fax: 044 2430369, Email: energy1@vsnl.com, Web: http://education.vsnl.com/mcrc

Developed spirulina technology for rural application as well as a technology package for natural indigo dye extraction and dyeing. Under the late Dr C.V. Seshadri, did serious and pioneering work on organic farming. The Institute continues to do work on organic farming even today.

(Source: Communication with OIP)

M. S. MURUGAPPA

35 Devarajanar Street, Vedachalam Nagar, Chengalpattu-603001, Tamil Nadu. Ph.: 04114-228271, Email: murugaps_14@yahoo.com

Murugappa was the first farmer in his area to use Azotobacter, the nitrogen fixing agent for sugarcane on a large scale thus substituting nitrogen-based (inorganic) fertiliser.

He grows paddy, pulses and vegetables using bio-dynamic inputs and sells organically grown products in and around Chennai.

(Source: Communication with OIP)

CENTRE FOR INDIAN KNOWLEDGE SYSTEMS (CIKS)

30, Gandhi Mandapam Road, Kotturpuram, Chennai - 600 085, Tamil Nadu. Ph.: 2447 1087 / 2447 5862, Fax: 2447 1114, Email : ciks@vsnl.com / info@ciks.org, Web:www.ciks.org

The Centre for Indian Knowledge Systems (CIKS) was formed as an autonomous organization in September 1993 and it was registered as a Trust in January 1995.

Following is its charter of beliefs: 'We believe that even today in very many crucial and basic sectors, the vast majority of the Indian population is sustained by the knowledge, skills and material resources of the traditional sector. However, these systems have received very little by way of attention and even less by way of financial support or institutional help from the Government. Even when traditional sciences or technologies are studied, it is often in the nature of the study of history of literature or 'Indology' and almost never from the point of view of their contemporary relevance and potential. Moreover, appreciation of tradition is usually limited only to the aesthetic and decorative dimensions of the products of our tradition and not their functional aspects or as living traditions that have relevance for today. Our main objective therefore is to work towards strengthening and revitalization of Indian knowledge systems with particular focus on traditional agriculture and healthcare systems.'

Activities of the Centre:

- Action, research and training programmes on various aspects of organic farming;
- Research on cultivation of organic rice, cotton, oil seeds, vegetables, etc.;
- Setting up of rural gene banks for the conservation of traditional seed varieties;
- Development of the use of biological control agents for the control of pests in different agro ecosystems;
- Research on the applications of vrkshayurveda (traditional Indian plant science);
- Setting up of an organic farming resource centre which would act as a clearing house for information on organic practices;

- Arogyam – a scheme to make available organic food from farmers to consumers at reasonable prices;
- Seed banks in villages across Tamil Nadu with on farm conservation of over 130 paddy and 50 vegetables varieties;
- Research and publications on medicinal plants;
- Training programmes on the use of traditional medicine for various groups;
- Preparation of audio visuals on various aspects of traditional healthcare systems;
- Publication of newsletters, manuals, posters and monographs on traditional health care and traditional agriculture.

Their main field work area is Kancheepuram district which has two experimental farms as well as a training centre and a field office. A field station is also located in the town of Sirkazhi, Nagapattinam district. The organization has twenty six full time staff members, a panel of consultants and a team of volunteers to help it fulfil its objectives.

'CIKS Wire' is the online monthly newsletter of CIKS. Those interested in receiving it can send a mail to infor@ciks.org / ciksorg@gmail.com For a list of prominent publications check its website.

T.S. SRINIVASAN CENTRE FOR RURAL TRAINING

C/o TVS Academy, SIPCOT-II Phase, Bethallapalli, Hosur 635 125, Tamil Nadu, Ph.:04344 260489, 260448, Fax: 04344 260419

Contact persons: Ms. Bindumathi Mohan & Mr. S.Murugakani

(Coordinator – Ms.Srividya Mouli)

The T.S. Srinivasan Centre for Rural Training (TSSCRT) was set up to establish a model farm, educate and train local farmers in organic agricultural practices, build a network of farmers and disseminate the benefits of organic products to the public.

For the past four years TSSCRT has worked with farmers in and around Hosur. It has created awareness in small and marginal farmers about the harmful effects of chemical based farming. It has helped farmers who wish to switch to organic farming practices by providing them training, guidance and marketing facilities.

It conducts research and experiments on bio-pesticide preparations, composting processes, organic bio-growth promoters, mulching, green manuring practices, etc. These are then standardised and taught to farmers in the various training programmes conducted by the NGO. Use of various predators and parasites like Crysoperia, Trichogramma, NPV and pheromone traps are also included in the integrated pest control research programmes.

Training programmes and demonstrations are held regularly at the Centre and in various farmers' fields to introduce various eco-sensitive, traditional (not yet forgotten) farming practices. Farmers are also exposed to new innovations like EM Technology etc. for an easy and quick switch over to organic farming.

The TSSCRT has also addressed itself to resource conservation techniques and actively promotes rainwater harvesting in various village forums. By making available expert guidance it helps farmers to restore water sources, harvest and conserve rainwater and prevent erosion.

A producer consumer network has been created, thus assuring the farmer of a steady market for the crops. This ensures that the farmers' produce is marketed efficiently and that the farmer gets a fair price for the crops.

(Source: Communication with OIP)

KEYSTONE FOUNDATION

Keystone Centre, P.B. No. 35, Groves Hill Road, Kotagiri 643217 Ph.: 04266 272277/272977 Fax: 04266 272277, Email: kf@keystone-foundation.org Web:www.keystone-foundation.org

Contact person: Mathew John, Director

Keystone has within its fold, both, a registered trust and a partnership firm. Both, though independent with divergent philosophies, consciously attempt to complement each others' activities.

The Keystone philosophy:

Today there are only a handful of development groups with a conscious mandate of working with both conservation and basic needs issues. Thus, it becomes imperative to synchronise social, economic, and ecological systems and introduce effective strategies for change. Keystone strives to achieve this synchrony. It has decided to work in the field, specifically in mountain ecosystems with indigenous people. Keystone believes that a small yet effective group of professionals, in touch with ground realities is capable of carrying through an issue from the concept to the implementation stage.

Keystone has practical interests in:

- forest ecosystems and associated traditional skills e.g., honey hunting practice of indigenous communities, use of non-wood forest products;
- land restoration and conservation: organic land use options, traditional agriculture;
- water distribution and management systems: drinking water, micro-irrigation;
- appropriate technologies in energy, apiculture, shelter, agriculture, water resources;
- marketing and distribution for a gamut of natural products;
- local capacity building for sustained action including village youth training and building relevant field station infrastructure.

Keystone is involved in the incorporation of millets into the public distribution system is are looking forward to increase their net working partners. It is involved with 32 local groups and 300 farmers. Products grown and promoted through them are coffee, millets, spices, silk cotton and honey. They are part of the National PGS group and IFOAM International.

Keystone has within its relatively young lifespan established linkages with a large number of individuals and organizations with whom it exchanges ideas, skills and shares experiences. The group members are a part of The Shola Fellowship, a network of like-minded individuals, and a member of Apimondia – the world federation of beekeepers.

Keystone is centrally involved in the Participatory Guarantee System of certification of OFAI

(Source: Communication with OIP)

SANTOSH FARM

Ooruppannadi Nivas, Kottur Malayandipattanam, Pollachi, Coimbatore District – 642 114, Tamil Nadu. Ph.: 04259 –286499 to 286504 Cell: 09442416543 Email: santoshfarms@gmail.com

Contact: Madhu Ramakrishnan

Madhu Ramakrishnan hated agriculture in his youth, as the income was very low when compared with other professions. He studied to be an engineer and then entered industry. Inspite of this, he has been farming for the past 25 years. Only recently he has began to understand its real nature after reading Fukuoka's 'One Straw Revolution.'

The farm layout is as follows: 32 acres coconut, 5 acres mango, 5 acres teak, 4 acres tamarind and 2 acres of fodder crops. The coconut plantation is interspersed with cocoa, silveroak, arecanut, kadepela and medical plants as well as leguminous crops. The teak plantation has pepper plants. A small orchard is also maintained with jack fruit, chickoo, amla, guava etc. The plants and trees selected for intercropping provide a large amount of leaf fall. Vetiver is cultivated to avoid soil erosion.

The farm has plenty of water with three open wells plus canal irrigation. There are 15 cows and 40 sheep. Gobar gas plant is also established and the slurry is used for making panchgavya. Only vermicompost is applied to the entire farm. He gets 5 tonnes of vermicompost per month. Vermicomposting is demonstrated to interested farmers every second Saturday of the month.

There is zero tillage on the farm since 1996. Medical plants are grown for the preparation of bio-cides for plants. All coconut wastes are recycled. Arrangements for wind breaks are now under development.

Ramakrishnan has found that as a result of organic farming there is no need for tillage, no fertiliser is necessary, weeds are much less, water requirement is less yet the health of the soil has improved, the plants have natural resistance against pests and diseases, the produce is of good quality and there is less labour requirement, less expenditure and less work for the farmer. He strongly advocates organic farming.

(Source: Correspondence with OFAI)

NARDEP

Vivekananda Kendra – NARDEP, Vivekanandapuram, Kanyakumari – 629 702, Tamil Nadu. Ph.: 04652 246296, Fax: 04652 347177, Email: ngc_vknardep@sancharnet.in

Or

Technology Resource Centre, VK-NARDEP, Kalluvilai, Tamil Nadu. Ph.: 04652 270755, 271270

VK-NARDEP is a project of Vivekananda Kendra. VK-NARDEP is working in the fields of cost-effective housing, water management, organic farming, medicinal herbs and propagation of non-conventional energy sources.

To propagate organic farming, VK-NARDEP undertook the dissemination of the following technologies:

i) Farm yard manure;
ii) NADEP compost;
iii) Biogas slurry;
iv) Vermicompost, etc.

With harmful side-effects and contra-indications of synthetic medicines taking their toll, the search is on for a more humane alternative. For us Indians, long reared on mother's medicine-chest, it comes as no surprise that grandma's household herbs are proving their worth today. Long forgotten, and once freely available, these herbs today scream for attention. Widespread deforestation has also confined their spread to a few places. The aggressive patenting and copyright of these remedies by commercially oriented global interests make it imperative that we safeguard our age-old wisdom.

VK-NARDEP appreciates the need for proper documentation of the geographical spread and use of various herbs besides their non-commercial motive production. Armed with its widespread contacts with scientific institutions, other agencies and general public, VK-NARDEP endeavours to establish a network of indigenous health workers and physicians to raise herbal nurseries and gardens, and to train people in raising such nurseries and prepare herbal medicines.

The enormous potential of biogas technology encouraged quite a few to install bio-gas plants. Obtaining energy from waste and organic fertiliser by-product enthused many. The initial enthusiasm soon wore off as defects came to the fore and the lack of trained technicians for repair work was felt. This need was fulfilled by VK-NARDEP. It launched biogas users' awareness camps, as well as training courses for users and masons. Today it is one of the largest turn-key agencies for bio-gas construction, having constructed 1500 plants.

VK-NARDEP has published, in association with Ministry of Non-conventional Energy Sources, Govt. of India, a manual (in English and Hindi) on repair and maintenance of biogas plants.

As a result of its R&D efforts VK-NARDEP has also developed a new biogas plant model 'VINCAP which tries to reduce the cost of the existing models. The model is presently undergoing rigorous field trials before it is offered to the general public.

To reinstall a reverent regard for Mother Nature, VK-NARDEP organises eco-clubs in schools and other institutions as also seminars and campaigns. It has also produced an audio cassette 'Echoes of Eco' containing meaningful songs with lilting tunes on ecology in Hindi, Kannada, Malayalam, Tamil and Telegu. A companion volume contains their notations as well as their meanings in English and Hindi.

(Source: Brochure)

N. NAGARAJ

N. N. Farms, 244, Bahuttampalayam, Ekkaraithatthapalli P.O. Via Bhavanisagar – 638451, Erode District, Tamil Nadu. Ph.: 04295 221895, Cell: 09443071495

Nagaraj is a well known jasmine flower grower. He grows banana, turmeric and vegetables organically.

Panchkavya, herbal pesticide and vermicompost are all prepared on the farm. Surplus is sold.

(Source: Communication with OIP)

S. POONGODI/R SELVAM

Pudhu Nilavu Organic Farm / Manonmani Vermi Farm,
Thalavumalai, Arachaloor, Erode District - 638 101, Tamil Nadu. Ph.: 0424 2357537
Email : manpulu@rediffmail.com

Pudhu Nilavu Organic farm / Manonmani Vermi Farm was started in 1999 by S. Poongodi and R. Selvam with the aim of producing vermi-composters and not just vermi-compost. Selvam and his wife wanted to create awareness and train farmers in vermin composting. Manonmani is a Tamil epic in which the earthworm is referred to in detail. Hence Nammalwar gave it this name.

The farm is 2.6 acres and has more than 400 trees of 80 different species. Around 1/4 portion of the farm is being developed as a model farm for training programmes. Although water from canal irrigation is readily available, this source of water is not being used since they prefer to use water sources from within the farm property. They utilize water from a tube well for drinking and so far have taken water from the well for saplings only on 7 or 8 occasions.

When they bought the farm in 2003 there was hardly any organic matter except for some hardy weeds. Now the whole farm has knee high carpet of a multitude of grasses that can feed the cattle and goats reared in the farm.

In 1999 Poongodi has started a vermi-composting unit with help from a bank manger (as at that time banks considered vermi-composting a losing venture). Realising that vermi-compost is very essential for a farmer to be able to shift to organic farming she decided to build a training center for promoting vermi-composting among the farmers. At that time vermi-composting training was available only in research centers and colleges or at some NGOs farms.

Selvam has become a major expert in SRI, but finds time for campaigning on issues affecting farmers

Poongodi is an expert and innovative vermiculturist

She initially started vermi-composting in tanks constructed using cement slabs. Many farmers trained but the number of those who started units on their farms were very few - the reason being that this system needs money for constructing tanks and shed to cover the tanks. So she tried various methods and finally found that leaving the worms in natural way is the easiest one. She has now developed an open bed method of vermicomposting in the open yard even where there are no trees – just under the sun. She has innovatively used mulching over the bed of about 1 foot high and 3 feet wide (length varies). Poongodi says: 'Previously the shed was constructed over the heads of the people. Now a roof is constructed over the heads of the worms'.

After developing this method almost all the trainees have started their own vermi-composting units. Many of the commercially successful units are following this low or no cost vermi-composting. Several farmers (men and women), women self help groups, college students (including agricultural college students) have came to her farm for training. Banks too have now started giving loans for vermi-composting with out any hesitation.

Poongodi is now on the faculty of vermi-composting training programmes of many community colleges. Poongodi and Selvam were instrumental in starting an UGC approved, add-on course on vermicomposting and solid waste management in a local womens' college.

The earthworm used is Eudrillus eugeniae species. However, other types are reared here for exhibition purposes. The centre also has seven different types of vermi-composting models – ranging from pots to cement tanks. The training course includes lectures and demonstrations. Fees for a one day training course are nominal – women pay Rs.250, men Rs.300 and couples Rs.450. A maximum of 20 persons at a time are taken for training to ensure better interaction.

The training centre also offers a 3 days intensive residential course which includes topics such as: agricultural history of India, soil health, water management, compost making, mapping, indigenous plant protection techniques (amrut pani, panchagavya, insect repellants), cattle breeds, etc.

Selvam has written many articles on organic farming, farmers' issues, genetic engineering etc. in various dailies and farmers' magazines and has also written and co-authored some books in Tamil.

(Source: Norma Alvares)

GANDHEEPAM

Kuringi Bhavanam, Kilavayal – 630 410, Sivagangai District,
Tamil Nadu. Ph.: 04577-244222/244177/244111

Contact Person: V. Ramani

Organic practices for medicinal plants conservation and promoter of kitchen herbal gardens.

(Source: Communication with OIP)

M.A. APPAN

Natural Life Center, 32/1, East Street, Kulasekaran Pattinam
– 628 206, Tamil Nadu, Ph.:04639 251425

Appan has a three acre plot near the sea under orchard cultivation since he believes that humans need natural food, not cereal or cooked vegetables to remain healthy. He grows primarily coconut and a few other fruit trees which can survive the saline air and soil. He has always practiced organic farming. Mulching is the only organic farming technique he employs, using cow dung or goat dung mixed with leaves to provide nutrition to the trees. He believes that the best manure for any plant is the waste product of the same plant. Hence all the waste products of the trees are given back to it through mulching. He claims, that alone is sufficient for healthy growth of the tree and good fruit crop.

He teaches that all kinds of diseases, both physical and mental, can be cured only by raw-food diet with yoga and without any medicine or surgery.

He is the author of two books published in English - How to cure diseases with natural foods (2 vols.) and How to live without diseases.

(Source: Norma Alvares)

SOPORT

M-3, Housing Unit, Salai Road, Woraiyur, Trichy – 620 003,
Tamil Nadu. Ph.: 0431 2761029 (O), 2762257 (R), Cell:
09842476063

Contact: Smt. S. Muthumala Devi

SOPORT stands for Society Organized for the Promotion of Rural Tribals. SOPORT has been set up by a young married lady, who by her own admission is a wealthy landowner. She is heir to about 100 acres of family owned land in Theni district. The area is known for its coffee plantations and orchards. Most of the land is hilly and is cultivated with coffee, cardamom and a variety of fruit trees like orange, guava, pomegranate etc. On the plains they grow paddy, sugarcane, banana, coconut and tapioca.

Muthumala herself doesn't farm the land – she has plenty of workers engaged by her family who from earlier times work on the land and thus earn their livelihood. Muthumala visits the farm regularly and takes keen interest in its running.

She says that the farm has totally moved to organic farming since the past five years. Even before that, they were not strictly chemical farmers as their use of fertilisers and insecticides was mixed with some time-honoured traditional practices followed by all farmers in the area. So the decision to be fully organic was not difficult to take at all.

Asked about the consequences of not using pesticides she says that there is no serious threat of pests though there are attacks now and then. Earlier they used to inject into the plants to ensure that they remained healthy but now they have stopped pesticides altogether. Instead they have adopted another technique. When they find pests attacking one species of plants they allow the pests to have their fill of the food they want. That takes their attention away from the other plants and saves the rest of the crop.

Muthumala who is a post graduate in family counselling organises Self Help Groups and actively promotes organic farming through them.

(Source: Norma Alvares)

V. S. ARUNACHALAM

Elunkathir Organic Farm, P. Vellalapalayam Post, Gobichettipalayam, Erode District – 638 476, Tamil Nadu. Ph.: 04285
246301, Cell: 094433 46323

V.S. Arunachalam, son of a small farmer from a rural background is an ITI diploma holder. Instead of using this training he decided to farm and fortunately chose to do it the ecological way. The special features of his farm are:

(i) Integrating goat rearing with crops;
(ii) Preparing panchagavya with goat products;
(iii) Mixing cattle urine with irrigation water;
(iv) Vermiculture in between banana trees;
(v) Mulching in sugarcane;
(vi) Single seedling plantation in rice; and,
(vii) Green manure preparation by sowing 20 kinds of crop seeds.

He made significant contributions to farm reclamation efforts of salinated lands during the tsunami. His present engagement is with Nariguravas (tribal) children.

(Source: Revathi and Nammalwar)

Arunachalam has been a consistently successful organic farmer

The Biodynamic Association of India (BDAI)

BDAI Secretariat

Ichor Estate, Pethuparai, Perumalmalai PO, Kodaikanal 624 104, Cell: 09360390873, Email: bdaind@gmail.com, jakesjayakaran@gmail.com, Web : www.biodynamics.in

Contact: C Jayakaran , David Hogg

In India, the Biodynamic movement started in the early 90's. Amongst the first initiatives were the Kurinji farms near Kodaikanal, the Maikaal cotton project in Madhya Pradesh and the tea projects in Darjeeling (Ambootia, Selimbong, Makaibari) and South India (Singampatti – Oothu). Other large-scale practitioners are ISKCON farm, Balmaadi Coffee Estate etc. besides hundreds of medium scale and small farm holders.

The Biodynamic Association of India (BDAI) was set up in 1999 with the primary objective of promoting and co-ordinating the Biodynamic Movement in India to provide training on biodynamic agriculture, link up with the international Biodynamic movement, interact with Demeter International in Germany, promote and support the trade and commerce connected with Biodynamic agriculture in India.

It has its registered office in Bangalore, Karnataka.

The movement has grown substantially over the past 15 years. Requests for training are an indicator of this growth. Regular trainings are conducted at Kodaikanal, Madhya Pradesh, Bangalore, Anand, Mysore, Nainital etc. Member practitioners also conduct trainings in local languages wherever they are based.

Services and Outreach:

Website: www.biodynamics.in

News Letter: BDAI publishes a quarterly newsletter – BIODYNE. It contains articles by practitioners of Biodynamic agriculture, articles of topical interest on agriculture, and announcements of BDAI activities.

Planting (lunar) calendar: BDAI publishes a Biodynamic farming and gardening calendar every year for the benefit of members and BD practitioners. The calendar is based on Maria Thun's calendar and adjusted to Indian time zones and regions.

Training Manual: A detailed manual on Biodynamic agriculture is developed for the use of trainees.

BD Preparations: Reasonably priced quality BD preparations are available through the association.

Consultancy: The association also promotes quality control and certification of Bio dynamic farms and products to support trade.

Conferences: Are organised for promoting trade and building partnerships with national and international interest groups.

Presently the office bearers of the association are:

President: Mr C Jayakaran, Treasurer: Mr Samuel D Mohan, Secretary: Mr David Hogg

The website is a rich resource for detailed information on the principles and practices of Biodynamic agriculture. It offers links to several practitioners and farms across India.

(Source: Communication with OIP)

David Hogg of BDAI seen busy with extraction of cow horn manure

Biodynamic Tamilnadu

56, Gopal Street, K.K. Pudure, Coimbatore 641 038, Tamil Nadu. Ph.: 04254 26831

Contact persons: Francis and Mahesh

Francis and Mahesh promote biodynamic agriculture among farmers in the Nilgiris and Coimbatore district. They work with individual farmers, societies or collectives, NGOs, and government organisations and are happy to teach the technicalities to anybody who is interested.

Sample plots are first set up. Once the farmer is convinced, he is then helped to convert his farm to biodynamic agriculture. A farmer may take one or more years to get into biodynamic system of farming. Farmers who convert from mainstream agriculture to biodynamic or organic agriculture also need constant monitoring and follow up. As they are not funded, a nominal fee is charged for services. Planting dates and preparation details are made available to all who contact them.

Contact may be made along with farm and proposed crop details well in advance of preparing the land.

(Source: Communication with OIP)

K. MOHANASUNDARAM & PUSHPARANI

Amudha Surbhi Organic Farming Training Centre, 12, Thingalur Road, Nasiyanur Post, Erode District – 638107, Tamil Nadu. Ph.: 0424 2555227

Mohanasundaram and his wife Pushparani farm, teach and train others in natural/organic farming on their farm land. The plot is three and half acres, of which one and a half is owned by them and two acres is on lease. They were not always organic farmers, but have been so for the past eight years. In 1986 when the farm used chemical fertilisers, Mohanasundaraman's father got the first prize in the state for growing maize. However even at that time they did not use chemical pesticides or insecticides, only chemical fertilisers.

Mohanasundaram's conversion to organic farming came when he realised that it was not fertilisers that were having an impact on the crop.

According to him eight years ago he had used DAP as fertiliser for growing lady's fingers. On one occasion he noticed that even after three waterings the fertiliser had not dissolved but remained intact around the roots where he had applied it. So he questioned the shopkeeper from whom he had purchased the bag. The seller told him that sometimes the bag is not a good one and the fertiliser does not dissolve. It had happened occasionally to others as well; the shopkeeper had said that it was just plain bad luck.

That set him wondering, for he had noticed that the lady's fingers were growing reasonably well despite the fact that they were obviously getting no nutrition whatsoever from the applied fertiliser. He understood then that the chemical fertilisers are not really necessary and from then onwards stopped using them altogether on the farm. Instead he started using micronutrients and found that this not only improved the yield but also the colour of the vegetables.

Mohanasundaram's farm grows vegetables, turmeric, bananas and green fodder. He needs the fodder to feed the large cattle population. If there is enough water he grows paddy. He never uses a bore well as he believes this is anti-national. In¬stead he uses water from an open well. He has two bullock carts and one hand power tiller.

His cattle population comprises of two bulls of 'Aligarh' variety, two 'kangeyam' cows (they are an indigenous variety that are very sturdy and can work like bulls – unfortunately they are fast disappearing) and three hybrid cows. He also has ten 'Jamuna' goats and forty odd mixed poultry of desi variety. He believes that desi is best explained this way: You can feed two Aligarh bulls the fodder required for one kangeyam cow. You can feed two Kangayam cows what is needed to feed one buffalo. And you can feed two buffaloes with what is required for one hybrid cow. So when you have to feed hybrid cows there is bound to be fodder scarcity. That is why he says that although he once owned twenty-eight hybrid cows he sold off as many as he could and purchased local breeds instead.

To enrich the soil with cattle manure he simply puts all the animals at night on a plot which is not under cultivation. Over a period of time, the accumulated dung and the urine generates earthworms and the soil improves naturally. He rotates the cattle in this manner around the different plots and saves himself the manual labour of having to clean sheds etc., and the bargain of getting good soil as well. It's the lazy way of doing farming, he laughingly claims.

There is no dearth of purchasers for the products of his farm. In fact, he always sells at a premium. He avoids brokers and wholesalers as far as possible and prefers to sell directly to the consumer at the farm itself. If no middleman is involved he claims he earns a 60% profit from such sales. For the past four years he has been selling the green turmeric as a root crop for planting material to other farmers.

He believes that panchagavya can cure people with ailments like psoriasis, ulcers, diabetes and arthritis and prepares panchgavya for sale for human consumption. Many officers from the agricultural department and the university visit his farm and though he is just an SSC, he is often invited to deliver guest lectures at the university in biology and zoology. Pushparani, his wife, is one of the leaders of TANWA (Tamilnadu Women in Agriculture).

His message: For the future, there is no choice except organic farming, if you want both agriculture and the agriculturist to survive. Many have already changed over. It is high time everyone does.

His recent interest is in promotion of eco system based agriculture.

(Source: Norma Alvares)

E. ANAND

Ph.: 0431 2553757, Cell: 098942-53757

Anand a young man who actively pursued his father's dream of creating a forest on barren land while still in college. To his father's dream he added his own vision of creating a forest that could sustain a community of people who could work on the land, living in harmony with nature and with each other. A tall order indeed but one that Anand pursued with great fervour.

About a decade ago, his family purchased a plot of four and a half acres of land in a drought prone area. Three and a half acres were planted with a variety of fruit bearing trees like chickoo, mango and guava. One acre is cultivated with paddy and other cereals. The fruit trees have begun to bring in an income now. The cultivated crop is sufficient to feed the family of two adults and three children who live and work on the land. They have experimented with the Madagascar method of cultivating paddy.

His farm has been wholly organic from the beginning as he firmly believes in the natural way of life. He uses panchgavya which is self prepared and also some bio-fertilisers, which he purchases.

As there are no other sources available nearby he gets water from a bore well. His farm is presently the only green spot in an otherwise parched and barren landscape all around. He intends that one day, in the not too distant future, his forest will have not only fruit trees but a mixture of timber, fodder and medicinal trees, all indigenous forest species.

Anand says he is a first generation farmer. He has no prior experience in farming and is learning from those who are working on the land. Initially he took up the study of botany in college, not finding it of much use, he switched to biotechnology.

He is presently the state coordinator of the tree planting programme initiated by the Isha Foundation, Coimbatore.

(Source: Norma Alvares)

R. NALLUSAMY & SHANTI

Koppampatty Post, Thuraiyur Taluka, Trichy – 621 012,
Tamil Nadu. Ph.: 04327-253366

Nallusamy and his wife Shanti are well known tapioca farmers who have only recently converted their entire twenty-five acre farmland to organic. Nallusamy says that a few years ago he met Nammalvar who strongly advocated that he turn to organic farming. However, rather than take Nammalvar's word for it, Nallusamy decided to visit several organic farms. Being completely convinced, he converted his own farm to fully organic. The benefits were immediately visible.

Ten acres of the 25 acres farmland are under tapioca plantation, turmeric is grown on five acres, coconut plantation occupies another six acres and the remaining four acres have a mixture of paddy, onions and vegetables. Shanti is the one who actually manages the farm with Nallusamy co-ordinating the activities and assisting from time to time. They own five Sindhi cows. They now prepare herbal pesticide, panchgavya and vermicompost. Nallusamy says that with this combination of organic nutrients and pest management strategies no insects dangerous to the crops visit his field. Even rats do not dare to visit his farm, he confidently asserts.

He sells the rice directly to the consumer and at a premium – 40% more than the market rate. There are enough local customers who want to buy from the farm itself so he does not have marketing problems for rice. Turmeric and onion are sold wholesale to the market while tapioca goes to the sago factories. The vegetables are for personal consumption only.

According to him, the ten acre tapioca plot gave them a harvest of four thousand 80-kg bags of tapioca. This was much more than they were getting earlier. Besides, with chemical farming the roots of the tapioca would break below the surface more easily, so part of the crop used to be lost that way. Now with organic farming the starch content in the roots is more, the soil is also looser and so the root crop comes out completely. It is the starch content that decides the sale price of tapioca and people even come all the way from Kerala to buy their tapioca at a premium.

Turmeric too has shown a better crop with organic farming. Previously he used to get 16 quintals per acre but now it has increased to 20 quintals. He attributes this increase in yield to the fact that he has gone in for mulching in a big way in the turmeric plot. Mulching also conserves water and prevents weeds from growing.

And if a farmer is still hesitant about switching to organic farming, Nallusamy offers one final reason which he says never fails to impress: 'We straightaway save Rs.1.5 lakhs a year by not having to purchase chemical fertilisers.' What more arguments will anyone need after this in favour of organic farming? That is why Nallusamy has now joined the band of campaigners for organic farming, eagerly recommending to all farmers to switch to this form of agriculture at the earliest opportunity.

Nallusamy now takes classes on vermiculture for farmers at the agriculture department.

(Source: Norma Alvares)

M. KRISHNAMURTHY

Kullampalayathar Thottam, Perumapalayam, Nagalur Post,
Via Athani – 638 502, Bhavani Taluk, Erode District, Tamil
Nadu. Ph.: 042567-261463

Despite owning a fifteen acre plot of farmland, Krishnamurthy almost gave up farming since he simply could not make ends meet. His is a drought prone area and the main problem naturally is water shortage. Ironically, however, weeds grew in abundance and this state of affairs nearly drove him to despair.

Then he came to know of organic farming. He switched overnight to organic farming practices as he had nothing to lose. To his amazement he found that not only was expenditure on maintenance of the farm greatly reduced but that both the problems of water shortage and abundance of weeds become manageable issues instead of the nightmare they earlier were for him. So he has decided to continue to be a farmer instead of selling his land and migrating to the city.

He now owns thirty sheep and two cows. Three acres of the farm are under coconut plantation, two acres are sown with maize, two acres have bajra, one acre is for mixed vegetables and the rest of the farm is reserved as sheep grazing ground.

He follows some permaculture practices on the farm. He also prepares panchgavya and herbal pesticides but firmly says that it is the simple organic farming practice of mulching which turned his fortunes around. Not that he makes much money even now. Due to continuous drought over the past several years it is difficult for the land to yield as much as it should. He is forced to sell the sheep kids when they are just weaned even though at that age they don't fetch as good a price as they would if he were to rear them for a while, but he says he cannot afford to take a chance as later on his source of fodder could be scarce and insufficient.

All his energies are now spent trying to harvest every drop of water that falls on his land. He has tried rainwater harvesting on one acre. He has done farm bunding for all the plots, solely to ensure that all the water received is trapped. Mulching, he says, will take care of the rest.

He is a firm believer in organic farming for the simple reason that this alone has been able to give him reason to hope for the future.

(Source: Norma Alvares)

VOICE TRUST

18, Thathachariyar Residency, Mampala Salai, Tiruvanai
Kovil (post), Trichy – 620 005, Tamil Nadu. Ph.: 0431-
2433809/2650253

Contact Person: Mr. A. Gregory & Mrs. A. Jecintha

Voice Trust trains farmers in organic farming. It also buys the produce if a farmer cannot find a market for goods. Vegetables, maize and rice are some of the items that it purchases and are then sold in the open market. Voice Trust staff say that they have trained over a thousand farmers in organic farming persuading many of them to make a complete shift. It is their experience that the majority of farmers are able to find customers for their products without any assistance from them and very few in fact actually need help with making marketing arrangements.

(Source: Norma Alvares)

FAARMS

Office: 1 – A, Seeman Complex, Sivagangai Roadm, Madurai – 625001, Tamil Nadu. Ph.: 0452-2535603/2530143

Residence: 84-F, Kaliamman Koil Street, Pasumpon Nagar, Madurai – 625 001, Tamil Nadu. Ph.: 0452-2336659, 0452-3104616

Contact Person: Smt. K.S.Valli

FAARMS stands for Farmers Association for Agricultural Reformation and Modernisation Systems. It endeavours to establish a market for the organic produce of women, tribal communities and small farmers.

(Source: Norma Alvares)

DANIEL & JAYANTI KUMARAN

19 A, Shanmuganagar, SIPCOT, Pudukottai – 622 001, Tamil Nadu. Ph.: 04322 244551, Cell: 09443430963, Email: venturetrust@rediffmail.com

Daniel and Jayanti are a couple actively involved in promoting the concept of organic farming. On their five acres of land at Thiruvilaisolai they help to conserve in situ a variety of indigenous seeds that were going extinct. They also demonstrate various techniques of organic farming to farmers' groups interested in learning. Daniel says he learnt organic farming from Nammalvar. He also worked with AME and in 1982 did flood relief work with Oxfam. At that time the people told him there were varieties of crops that out of natural selection were found to be flood resistant. They were rarely sown, leaving the population in total distress when they were hit by floods.

Realization dawned on them that such seeds must be conserved and they began by conserving thirty-five different seeds on their farm. They have also given the seeds to over fifty other farmers for they believe that seed conservation practices to be truly effective should never be centralized.

Daniel is the convenor of the LEISA network in Pudukottai and the project director of Venture Trust. He also leads Green Action Network, which comprises of fifteen NGOs in the district. Daniel's work through LEISA and Green Action Network aims at developing farmers as scientists in their own land. Farmers are encouraged to experiment with practices that will help resolve the problems faced on farms. These land-to-lab farmer field schools are conducted all over Tamilnadu and are very popular especially for integrated crop management. The farmers' attention is particularly drawn to the need for nutrients to strengthen the crop's resistance to pests and other diseases.

On their own farm they grow paddy, maize, fodder and casuarina (the only mono-crop that fixes nitrogen in the soil). They have two 'Umblacherry' bullocks (indigenous to Tamilnadu) and two horses for transport. They also keep poultry - eighteen turkeys - which fetch them a good price on sale. They practice vermicomposting on the farm and train women farmers in vermicomposting.

They also undertook a project with the Pudukottai municipality to convert the garbage of the town into vermicompost.

(Source: Norma Alvares and Brochure)

V.C. KANNAN

220, Thirumalirunsolai, Pudukaraipudur Post, Gobichettipalayam – 638 313, Erode District, Tamil Nadu. Ph.: 04285 – 266303, Cell: 098427 61232

Kannan converted his six acre farm to 'fully organic' some years ago. Three acres are for sugarcane, one acre for paddy and two acres have a mixture of bananas, vegetables, turmeric, etc. He switched over to organic farming as he found that the chemical farming which he was earlier practising was not profitable. Also he learnt of the negative effects of chemical farming and how it degrades the soil.

Earlier he used to sell the sugarcane to the sugar mills but now with organic farming he finds that even 'waste products' have a use so he processes the sugar cane himself, making jaggery for which he has ready customers. He specializes in making jaggery powder which can be used directly in the tea, and is very popular. Earlier he used to buy hybrid seed but now he uses traditional seeds which he gets from his own farm and is therefore not dependent on the market.

His twenty animal cattle holding, four buffaloes and some bulls, all of indigenous breed provide him with plenty of cowdung. He also owns a bullock cart and plough. He manages to sell the vermicompost that he produces from the sugarcane waste. Kannan also makes panchgavya and herbal pest repellants, using plants that are not eaten by cattle. Kannan also has a herbal clinic in his place. He has received good response to his treatments.

Kannan is an educated man having graduated in Tamil literature. Being an only child he was expected to look after the family plot. With his enthusiasm and interest in agriculture he is happy in the farming profession.

(Source: Norma Alvares)

REETA GANAPATHY

Illuppakkorai – 614 202, Via Ganapathiagraharam, Papanasam Taluka, Tanjore District, Tamil Nadu.

On a five acre plot of farmland, Reeta cultivates paddy, vegetables, coconut and sugarcane, with turmeric being the intercrop in the coconut grove. The farm produce meets the family's personal requirements. Only the surplus is sold. Reeta says that they regularly get an income from the sale of vegetables and other farm produce. The family alone works on the farm keeping the costs down by engaging extra help only when they cannot manage themselves.

They have become organic farmers since the past ten years. Earlier they used chemical fertilizers and with it one naturally had to also use pesticides and so on. Finding the fertiliser cost very high they switched to organic farming. They also realised that chemical farming spoils the soil which is why you need more and more chemicals each year to give the same results and this is what makes chemical farming so costly. Now with the cattle they own they are able to prepare panchagavya, do vermicomposting, make their own herbal pesticides and so on.

Reeta is involved in more than just farming for sustenance on her own land. A school teacher, she resigned from her job and joined her husband in the farming profession. Frustrated with the place women are given in society and especially the injustices that her daughter had to undergo on account of being a girl she decided to start a womens' group. The women were trained by TANWA a Danish aided programme for women in agriculture. She was selected as the farmers' discussion group convenor at the Farmers Training Centre, Sakotai.

Hearing of a women farmers field training conducted by an NGO in another village the group approached the organisation for a similar training for them also. Training was held for 30 farm women from Iloppakorai village despite a lot of reservation from the men in the village. This proved to be an enormous confidence builder for the women. The NGO - Centre for Ecology and Research with assistance from the National Bank for Agriculture and Rural Development (NABARD) started an all women farmers club in the village.

A self help group to encourage the saving habit was started with Reeta's encouragement. Following the initial hesitation and reservation other women also gathered courage and started more self help groups. At present there are 20 such groups with 20-25 members in each.

- The women farmers club of Iluppakorai is involved in various programmes such as:
- Cattle health camps
- National environment awareness campaign
- Vermicompost training programme for solid waste management and organic farming using local resources
- Coir pith compost training
- Eco-development training for farm women and raising and maintaining a herbal garden in the backyard
- Training on bio-fertiliser and bio-pesticide productivity for sustainable agriculture
- Training in coir and coir mat making

The group was involved in taking over and protecting a sacred grove, Illupaithopu of 200 trees which was in a state of degradation and disrepair. By the efforts put in by the women the forest is on the path towards restoration. This and other developmental initiatives taken by the women have enabled a breakthrough in the perspective of the village society at large towards the role of women in decision making. Women who till recently could not step out of their house are now approaching the women's group for assistance and involvement in different initiatives.

The All Women Farmers Club led by Reeta was awarded the 'Women's Creativity in Rural Life -2003 award by the Women's World Summit Foundation, Switzerland.

(Source: Norma Alvares)

P. C. SUBRAMANIAM

Nasiyanur, Pallivalayam, Erode District – 638 107, Tamil Nadu. Ph.: 04326-240555

P.C. Subramaniam is a marginal farmer who practices integrated organic farming. He keeps his sheep in a deep litter house. He gets very good prices for his sheep. The manure from the deep litter house is used to enrich the soil and increase its water holding capacity. All his sheep are of the indigenous variety; he has carried out all his organic farming activities and experiments using sheep manure on his own and is pleased with the results.

(Source: Revathi)

K. S. RAGHAVAN

No. 2 Uppukinar Street, Kottur, M. Patnam PO, Pollachi, CBE – 642 114, Tamil Nadu. Ph.: 04259–2522271

Writes K.S. Raghavan:

I have inherited 6 acres of coconut plantations from my father and grandfather. 430 coconut trees of the age 27–30 years are growing on my farm. On this land, not a single ounce of chemical has been utilized since the 1960s despite the 'green revolution'. My grandfather had used considerable quantities of organic manures during his time but my father who planted coconut trees 30 years ago never used any form of manure whatsoever. A flood irrigation system had been adopted and coconut yields used to be, on an average, 90 nuts per tree.

In 1993 I took charge of the farm after my father's passing away and in 1994, the region experienced a severe deficit of rain. The well on our land could support only an hour of irrigation at a time and so I introduced a drip irrigation system for the coconut trees in order to cope with this water shortage. This proved insufficient and following problems in the drip system itself I went in for a bore-well, finding water at around 300 feet. I was able to revert to basin irrigation and introduced some organic inputs. The yield increased to around 120 nuts per coconut tree.

Hearing about Bhaskar Save in 1998 I thought I should pay a visit to his farm and tried to get some neighbouring farmers to accompany me. Since there was no interest from the others I ended up going alone to Gujarat where I stayed for two days with Bhaskar Save and learnt about his experiences personally.

Returning from Gujarat and inspired by what I had seen I began paying attention to mulching, even purchasing coconut waste from other places for this and also formed trenches between the rows of trees. I persevered with this 'extra trouble' every year much to the amusement of farmers around who could see no sense in my endeavours. An Eriophid mite epidemic affected the coconut crop in the state around that time resulting in a drop in my yield from 120 to about 100 nuts per tree.

The reading of Masanobu Fukuoka's 'One Straw Revolution,' 'The Natural Way of Farming' and the 'The Road Back to Nature' and meetings with our own natural scientist Nammalvar helped me continue to learn and apply the best natural options to my farm. I have received yields of 180 and even 200 nuts per tree from the farm.

In 2001 when I noticed profuse vegetative growth and decreased yields I again consulted Bhaskar Save. I decided to reduce the irrigation by adopting the platform and trench irrigation method. Besides this, two rows of glyricida plants which have a green manure value were also planted. My yields have regularly been better than the yields of those using chemicals to promote and safeguard their crops.

I am convinced about this approach and my goal is to move completely into pure natural farming eventually, spoken of by Fukuoka. Since 1998 onwards the moisture retention capacity of my soil has increased enormously and it is full of earthworms and other micro-organisms. All this, in a region where 6000 acres of coconut plantations were drying up and dying due to drought!

Mono-cropping and the intensive use of chemicals that have destroyed the soil are the main culprits. Farmers have not mulched their land resulting in a reduced capacity of the land to retain moisture and therefore large-scale water evaporation. Due to inadequate recharge wells also go dry.

My hope is that even without irrigation my land will yield good results in the future and Fukuoka's approach will be proved correct in India too.

(Source: Communication with OFAI)

S. THANGARAJU AND BANUMATHI

236/4, Akkarai Kodiveri Post, Kasipalayam (Via), Gobichetti Palayam, Erode District – 638 454, Tamil Nadu. Ph.: 04285 264150

Thangaraju and Banumathi are a couple from a middle income family who decided to switch to organic farming a few years ago. They follow all the standard organic practices. They specialize in relay cropping.

(Source: Revathi)

MR. NALLASIVAM

Arachalur village, Erode District, Tamil Nadu.

Mr. Nallasivam has been practicing organic agriculture in rice cultivation for the past five years.

(Source: Revathi)

MRS. SEETHALAKSHMI DEVARAJAN

Kalyana Mahal, 18, Venkatadasar Street, Sathyamangalam Town, Erode District – 638 401, Tamil Nadu. Ph. – 04295 220245

Mrs. Seethalakshmi hails from semi urban area. She decided to farm and initially used modern farming methods. However over the past few years she has switched over to organic farming and now she is a full- fledged organic farmer. The farm has an excellent sugarcane crop mulched with multiple green manure crops.

(Source: Revathi)

MARAPPE GOUNDER

Marappe Gounder is an enthusiastic organic farmer doing organic farming for the last five years. He owns four acres of land, half the area being purely under rain fed conditions. He practices mulching on a large scale. The major income of the farm is from banana and sugarcane. Ha also keeps some cattle which provide him with additional income and organic inputs.

(Source: M. Revathi)

P. K. DHANANJAYAN

READ Trust, Paramanandal Village & Post, Chengam Taluk, Tiruvannamalai District- 606 710, Tamil Nadu Cell: 09443019519, Email: readtrust@yahoo.co.in

READ Trust is a farmer information centre. Dhananjayan's farm is spread over 3.5 acres of dry land located at the foot hills of the Jawadhu hills. The main crops are paddy, groundnut and banana. The fringes of the farm have been planted with teak and coconut. The leaves of teak trees are regularly lopped to convert into green manure using earth worms. The farm uses panchakavya and herbal repellants and local plant species such as aadathoda, vitexnegunda, calopropics, neem, pongamia and lantana camara for pest control.

The Read Trust shares its knowledge on organic farming with interested farmers in the neighbourhood. It runs a Farmers Information Centre (FIC) in which news letters, pamplets etc., are displayed for the benefit of farmers. The Trust also promotes the importance and use of biofertilizers like Azospirillum, Rhizobiam etc., to improve the soil conditions as part of conversion to organic farming. Dhananjayan is a district trainer for self-help groups and individual farmers in Tiruvannamalai District for vermicomposting and other organic practices.

(Source: Communication with OIP)

MR. KUMARAVEL

Kanchikovil, Erode District,Tamil Nadu.

Kumaravel tries to innovate on his farm, particularly since he has limited water source. He combines trash mulch with live mulch. (Source: Revathi)

V. RAVI

Rajchettyar Thottam, Uppupallam, Kenjanur PO, Sathyamangalam via Erode District - 638 401, Tamil Nadu. Ph.: 04295 24779

Ravi is growing a variety of trees on his farm like nelli (gooseberry), pathimukham (from Kerala, bark used as a coloring agent), sapota, and guava. His farm looks like a wild patch of upcoming forest. He has put in place drip irrigation, inspite of enough water in the well. He sells earthworms and vermiwash.

(Source: Ramki Ramakrishnan)

Ravi has changed from monoculture to biodiversity-based organic farming. He remains a great expert on vermiculture.

Organic farming undoes tsunami havoc in agriculture

The Tamilnadu Organic Farmers' Movement (TOFarM) very effectively helped farmers desalinate their agricultural land with organic approaches. This happened in the villages of Nagapattinam on the east cost of India post-tsunami in early 2005. While the entire world and the aid agencies were busy addressing the massive death toll, loss of livelihood of the fishing communities and the tragic devastation, there was hardly any effort to study the impact on agriculture. TOFarM saw the need to bring back some semblance of normalcy into the life of the agricultural community in the area. It was one of the very first volunteer groups to be at the devastation site.

Tsunami had destroyed all standing crops that were ready for harvest within the following couple of weeks. Huge amounts of sand, mud, slush and marine debris had been deposited on the lands and the top soil was buried as deep as three feet in places. In this scenario, TOFarM initiated an intensive engagement with farmers and a massive reclamation drive of the salinated lands using organic farming techniques.

This intervention needs to be viewed in the back ground of the situation the farmers were faced with. The tsunami had just destroyed all their crops, many had lost their family as well. And, now they were being asked to experiment with organic farming methods on their lands which were their sole assets. These techniques were new to them and naturally a cause of apprehension in the circumstance.

More over, ever since the land had been affected by a major cyclone a few seasons previously, they had not been able to bring back yields to original optimum levels. In this background, farmers found it hard to believe in organic techniques, especially after agricultural experts on their visits had declared that these lands would not yield for at least the next 5 to 10 years.

TOFarM's consistent, supportive, educative and sympathetic approach paid off. In a short while, the farmers had sown using organic inputs. The reclaimed land showed amazing results. Come November 2005, the land was ready for the next sowing season. The news of these techniques spread far and wide thanks to the regional, national and international media that focused its attention on the tsunami. Organic methods as reclamation strategy for flood prone and natural disaster regions took firm roots.

A total of 1566 acres was recovered with the participation of 975 farmers in 9 villages. Training was provided for over 1300 farmers. Each farmer received ten fodder tree sappling and 6 tonnes of Daincha seeds were distributed to all across the area. Nearly 800 private ponds were cleared and over 3000 vermicompost units were set up.

The success of organic inputs forever destroyed the ill-advised notion of using gypsum for desalination of salinated lands; educating both, farmers and the government.

The following steps of reclamation were followed:

1. Cleaning water bodies (desilting water tanks, slush removal from farm ponds etc.).
2. Cleaning land / soil (leaching, removing sand casts, using JCB machines for high marine deposits).
3. Deep ploughing.
4. Cultivation of saline resistant green manure (growing Thakkai poondu i.e., daincha).
5. Digging trenches and ploughing back green manure crops into soil along with vermicompost and organic bio solutions.
6. Sowing of traditional indigenous saline resistant varieties of paddy.

This scale of operation and achievement was possible mainly due to volunteering efforts and ready assistance of organic farming experts from Tamil Nadu and other places. Many organic farmers assisted as trainers and technical experts giving the affected farmers the confidence to explore the new techniques. The ready financial assistance that came from international funding communities smoothened operations and outreach.

According to Revathi, the most powerful impact of their work in the disaster area is the message the world observed and saw first hand. At the time of the disaster, the area was the centre of focus of national and international government representatives, aid agencies, social organisations and media. A powerful message went across the globes that, even in a disaster situation, organic approaches were the right solution and the reclaimed lands became the largest successful demonstration for proving the strength of sustainable agricultural practices.

Hearing the success of this approach, the then President of India, Mr. APJ Abdul Kalam made his visit to the field area on June 30th 2005, five months post Tsunami and met the reclamation team and congratulated the ToFarM team, supportive individuals and farmers for their combined efforts.

Revathi was invited to interact with former President of the United States of America, Mr. Bill Clinton during his visit to Nagapattinam. She briefed him on the organic processes that helped the speedy recovery of affected lands. He was pleasantly surprised and proposed to carry the message of this organic solution to Sri Lanka and Indonesia.

This way the organic processes adopted reached a larger audience through the stewardship of world leaders, and the media. TOFarM was interviewed by BBC, Voice of America, Dutch Radio, Door Darshan. Representatives from California University, Harward University, Michigan University and Rishi Valley School visited and documented these organic processes for successful and speedy land reclamation.

Influenced by this successful demonstration INGOs and NGOs who were engaged in the tsunami operations followed the same practices. As a result, more than 25,000 acres of land at Nagapattinam alone were reclaimed organically. Because of the magnitude of organic reclamation and the visibility it received, the delta farmers affected by continuous disasters for the first time learnt disaster risk reduction and sustainable agriculture practices. TOFarM was praised as the initiator of this approach and a new trend setter in management of farmland devastations.

Doordarshan made a documentary film that was broadcast several times on the National Channel. UNESCO also made a short film for dissemination. Soon after Nagapattinam, they were invited to Indonesia to support the affected farmers there. The team stayed at Banda Ache in early 2006 for three months and trained farmers of 32 islands in organic approaches.

The next invitation for intervention came from Oxfam (GB) for Sri Lanka, to spread the organic message to the Tsunami affected farmers of Ampara District. Work that was started in 7 villages magically spread to more than 80 villages in a short span of time. By hearing its success, Ampara district administration came forward to initiate a tri partnership of a capacity building programme for the entire agriculture extension team of Ampara. The commitment on the part of the district administration, support of Oxfam (GB) and with TOFarM's technical guidance, the agriculture department of Ampara has been spreading the techniques in the entire district (66,000 hectares) for the past two years.

Besides these Tsunami rehabilitation efforts, TOFarM concentrates on spreading ecological and sustainable agricultural practices to a wide range of small and marginal farmers by associating with like minded organisations. TOFarM conducted more than 20 campaigns in Karnataka with the collaboration of KRRS and Caritas India. In Andhra, especially in the 'suicide prone area' of Anathapur, TOFarM conducted a chain of capacity building programs associating with the VANA (Voluntary Associations Network of Anathapur) in which more than 20,000 farmers participated. Associating with THANAL, a Kerala based organisation committed for organic promotion, TOFarM trained hundreds of farmers of the 'suicide belt areas' of Wayanad. Associating with Caritas India, TOFarM had a wonderful opportunity of exposing the Directors of Multi Purpose Societies of North and North East India to organic systems.

Till fairly recently, TOFarM hosted the TN secretariat of OFAI.

TOFarM continues its research activities in its Nagapattinam farm (a lease land of 2 acres) where traditional paddy seeds are being cultivated and saved.

Says Ms. Revathi in retrospect, 'Strength in their knowledge, and resilience in their approach, has seen the agricultural community in this country over come many difficulties in the past. It will see them through the current pressure being inflicted on agriculture through the international trade regime, rapid technological changes and a society in transition. Every community and society turns to what it considers as real security when it is in distress or deep crises. The zeal with which the farmers in Nagapattinam adopted traditional organic farming practices to over come the post-tsunami land reclamation is an indication that the farmer in this land still feels most secure in his tradition, his ancestral knowledge, his own intelligence and diligence in its interpretation and his ability to innovate constantly to find a solution. This provides all of us involved in the organic farming movement with immense hope and reassurance.'

The following links can be accessed for in depth details: http://www.fao.org/docrep/009/ag104e/AG104E08.htm http://rebuildampara.blogspot.com/2007_05_01_archive.html

TOFarM, 64-A Kalaimagal Illam, Periasamy Servai Street, Sundarapuram (PO), Coimbatore – 641024, Tamil Nadu. Cell: 09443343336, Swami- cell: 09994033551, Email: revathima@gmail.com,

(Source: As related by Revathi and RT Swamy to OIP)

SARASWATHI KRISHI VIGYAN KENDRA

Pulutheri Village, R.T. Malai (PO), Kulithalai (TK), Karur 621 313, Tamil Nadu. Ph: 4323 290666, Cell: 09442190234, Fax: 4312768283, Email: skvkk@yahoo.co.in, Web:www.skvkk.org

Saraswathi KVK is promoting agriculture through various approaches of technical assessment, refinement and demonstration of technology. Its technical team has experts in Agronomy, Horticulture, Plant Protection, Agricultural Extension, Agricultural Engineering, Home Science and Animal Science. It is supported by ICAR, New Delhi.

Their expertise is put to use in identifying location specific sustainable land use, training programmes in organic farming, sustainable agriculture, and appropriate rural employment. Their trainings are based on practice.

KVK is a service provider for the promotion of organic farming, group certification assistance to small and marginal farmers through ICS – Internal Control System under the scheme of National Project of Organic farming, Department of Agriculture and Cooperation, Ministry of agriculture, New Delhi.

(Source: Brochure)

TEDE TRUST

Office: 16, Vanigar Street, Thirupporur 603 110, Kanchipuram Dist., Tamil Nadu. Ph: 044 2744 6369

Residence: 1/123, I.T. Highway, Padur, Kelambakkam 603 103, Kanchipuram Dist., Tamil Nadu. Ph: 044-27474273/27446369, Cell: 09443346369, Email: tedetrust@rediffmail.com

Contact: R. Ranganathan

In Tamil Nadu, organic farming trials and experiments started from 1985. Tede Trust is one of the pioneers in the organic movement having built a wide grass-root farmer-cum-NGO net work in the state and is part of LEISA.

Their activities cover:

– Training in organic farming, permaculture and bio-dynamic agriculture.

– Campaign against pesticide poisoning.

– Production and marketing of all organic produce required for domestic consumption from honey to vegetables. (Source: Brochure)

N. GOPALAKRISHNAN

No. 4/19, Akila Nagar First Cross, Ganapathy Nagar, South Extension, Mambazhasalai, Thiruvanaikoil, Trichy - 620 005, Tamil Nadu.

Farm: Panickampatty village, Kuliathali Taluk, Karur District, Tamil Nadu. Cell: 094431 48224, 099421 67789, Email: dngopal2003@gmail.com / dngopal2003@yahoo.co.in

I am rooted to the village and my native village is Panickampatti of Karur district. My father and mother had no basic education. But through hard work they increased their land holding from a mere ½ acre to 60 acres and provided us with education. Out of these 60 acres I inherited 10.5 acres as my share. I used to follow the agricultural practices adopted by fellow agriculturists. My experience with chemical fertilizers and pesticides was not so encouraging. Cost of cultivation increased due to price escalation of basic inputs, at the same time there was steady decline in the yield. My see-saw battle continued with chemical farming till 1998. Having strongly felt the need to enhance agriculture production and also to do away with chemicals to save land from degradation and man

Annam Amudham

M. Revathi

Before venturing into ecological farming, Revathi served as a science teacher in a Government aided school for eleven years and her husband Thiruvenkataswamy served the Indian Navy for 15 years as Air Traffic Control Officer. They were exposed to sustainable farming in 2002. In their eagerness to know more, they visited many organic farms and interacted with a large number of practicing organic farmers. Motivated by what they saw and heard they decided to quit their jobs and spend the rest of their lives as a self-reliant farming family.

In 2004, they resigned and along with their little son Nithish Nanda began to practice ecological farming on their 12 acre farm. Along side the work being carried out in the Nagapattinum district through TOFarM which was registered as a trust in March 2005, they initiated integrated farming practices and research activities for demonstrations on their own farm.

Their personal interest is in collection and conservation of traditional coastal variety of paddy. Between 2004 and 2006, they have managed to collect 76 very rare varieties. These are grown each year for gene pool conservation. To name a few; Kuliyadichan, Uvar Mundan, Maduvu Mulungi, Karnel, Mappilai Samba, Vadan Samba, Ottadaiyan, Poongar etc. There are demonstration plots and sites of over 200 sustainable practices on the farm for the benefit of farmers who visit them regularly.

The entire land is split into three parts by design as Vanam, Kulam, Kalamn (Forest, Pond & Paddy Field). This is a unique design for the delta region where more than 6 lakh farmers are suffering every rainy season due to over flooding. On the farm 6 big farm ponds have been created. The soil dug out for making ponds was used on the fields to elevate a part of the farm. On the elevated land thus created, horticultural crops and hundreds of varieties of trees have been planted. In between the two is the paddy field. Whenever there is heavy rainfall, the water automatically reaches the farm ponds from where it is channeled to the paddy fields. On the outer boundary of the field, the outermost is a green fence and the inner is the shelter belt. The land is divided into many small plots, each one with an unique farm design. Various local native breeds of ducks, hens, cows, goats, fish, dogs and cats add to the diversity on the farm. A very inquisitive Nithish Nanda finds much opportunity for on farm explorations and experiments. For the care of these animals, only traditional herbal medicinal practices are adopted. No external inputs are used as all needs of the farm are met by on farm generated resources. The entire field is under micro irrigation. All the microbial solutions are added into the mixer tank itself so whenever there is watering, the plants receive the richest microbial nutrient water.

Being the founder trustees of TOFarM, their many external activities related to ecological farming keeps them very busy. Hence the entire farm is designed in a way that each aspect compliments the other and mostly the 'do nothing principle' is followed. This farm named ANNAM AMUDHAM, is a motivating model for farmers of the delta region.

Whenever there is high flooding, the total delta area is submerged under water and farmers lose their crop. But here as water withstanding, saline resistant, traditional paddy varieties are sown the crop is not affected by flooding. Many farmers are now getting interested in cultivating traditional variety of paddy. Every season, seeds were sown and new seeds are readily available for any farmer who is interested in growing traditional paddy varieties.

Revathi has recently been selected by the state agricultural department as a member of the high level empowering committee for drafting the organic farming policy for the state of Tamil Nadu.

(Source: Communication with OIP)

from health hazards, I started experiments with natural ways of farming and organic farming in 1998.

My baptism with organic farming was with the preparation of vermicompost. Traditionally, even during my father`s time, we used to compost about 400 to 500 tonnes of farm yard manure. This exposure proved to be a stepping stone for me. Instead of making farm yard manure I opted for vermicomposting.

Methods of vermicomposting at our farm at Panickampatti are:

Under Thatched Shed: Heap and tank method.

Under shadows of trees: Heap method.

Allowing earthworms to grow and multiply in between rows of plants like sugarcane, banana, etc.

In house: Earthworms in mud pots.

To get quality vermicompost the raw materials used are partially decomposed cow dung, farm waste, municipal waste, stalks of banana plants, small quantity of press mud, etc.

Other organic inputs prepared onfarm are vermiwash, panchakavya, herbal pest repellants, lemon–egg solution, fish solution and amrutha karaisal.

All these organic inputs are being used in our lands. The other organic methods deployed to enhance soil quality and productivity are mulching, live mulching, etc. To know the extent of organic farming in our farms one may dig one square

Gopalkrishnan is today a legend in the art of raising earthworms. He is also an extraordinarily dynamic organic farmer.

feet pit and easily find a minimum of 10 to 15 earthworms. Fertigation tank method is used to disperse organic inputs.

To enhance the efficiency of Panchagavya the following ingredients are added with primary panchakavya inputs.

Asafetida – To induce flowering and to avoid shedding

Eggs of Chick – To increase mineral content of Panchakavya

Tricoderma Viridi and Pseudomonas – To check the spread of diseases and to create resistance.

With the support of Consumers Association of Penang (CAP) training programmes were conducted in Malaysia and Malaysian farmers were given training on our farm at Panickampatty. I had the privilege of meeting our former President of India Dr. APJ Abdul Kalam at Delhi in March 2004. In 2007, earthworms from Panickampatty farm were taken to Mughul Gardens, Rastrapathi Bhavan, New Delhi to setup vermicompost beds. More than 4 lakh people have visited our farm over these years for a firsthand exposure to organic farming.

Organic farming is popularized by holding exhibitions, practical demonstrations and through newspaper articles, radio and television shows.

You are welcome to visit my farm at any time to gain first hand experience on organic farming.

(Source: N Gopalakrishnan)

ILANGOVAN & BEAUTY TRUST

39, Thirumanjana Street, Tal: Lalgudi, Dist.-Tiruchirapalli,
Tamil Nadu 621601. Ph.: 0431-2543755, Cell: 09842411953

The 3 hectare farm is located in Edaiyatrumangalam, Lalgudi. He is using vermicompost and other organic farming methods since five years, before which the farm used chemical inputs for 10 years. Rice, sugarcane, banana, coconut are cultivated. Surplus produced is sold alongside educating the consumer on benefits of organic foods.

Ilangovan has been a Zilla Parishad Board Member for three terms since 1996 and has used his position well to propagate organic farming methods within the district through the panchayat and the Beauty Trust. The trust works with 45 local associate groups in close association with 1000 farmers within Tirichirapalli through 408 village panchayats.

BEAUTY TRUST,

24 Lalgudi Mainroad, Lalgudi - 621 601, Tiruchirapalli,
Tamil Nadu, India (Source: Communication with OIP)

V.ANTONY SAMY

#53, Westcar Street, Sinthamani, Pulliyangudi, Taluk Sivagiri, District Thirunallvelli, Tamilnadu. Ph.:04636 233343
Cell: 9443582076

V Antony Samy is farming organically for the past 19 years on his 150 acre farm. In 1991 he converted to organic methods of farming. His first organic crop was paddy and later he began to cultivate other crops like sugarcane, fruits, vegetables using organic practices. Presently he is cultivating sugarcane – 20 acres; lemon – 60 acres; amla – 20 acres, paddy – 30 acres. On the rest of the farm he grows vegetables.

Prior to 1991, he applied all fertilizers – N P K and micronutrients – to his fields as per recommendations and popular practices. However, the fertility of the soil did not show any improvement. So he began by introducing the practice of mulching, and then in time converted to organic fully.

He makes jaggery from the sugarcane and uses the byproduct – molasses – for the preparation of fish extract. This is used to improve nitrogen fixation in the soil.

During his chemical farming days, he says, he used to spend in thousands on synthetic inputs because everything had to be purchased. But now, nothing comes from outside except diesel, electricity and salt. He is also saving 40% water as compared to previous use, the crops are drought tolerant and there is less of pest and disease incidence and total self-reliance.

(Source: Tamilarasi)

R. SRINIVASAN,

Vil: Kurumbarai, Post: Polambakkam, Taluka Cheyyur
- 603 309, Kancheepuram District, Tamil Nadu. Cell:
09884756090

The 15 acre farm is in Kurumbarai village. After having farmed chemically for 40 years he switched to organic farming a few years ago. Maize, Ragi, Chili, Sugarcane, peanuts, corn, pulses etc are grown on the farm. He uses sprinkler irrigation for groundnut agriculture after the harvest of which black gram and maize are cultivated on the same ground. Surplus is marketed

(Source: Communication with OIP)

A. RAJA PANDIAN

No. 2, U.V. Saminathan St., Maruthi Nagar, Raja Keelpakam
- 600 073, Chennai, Tamil Nadu. Ph.: 044-22270687, Cell:
09840620660

The farm is in Moovalur, P.O. Malliyam in Nagapattinam district. After farming chemically for 20 years he switched to organic farming two years ago because the yield on his farm was going consistently down. With urbanization creeping into rural areas, availability of labour also was a difficulty. Coconut, paddy, some vegetables, cotton, sugarcane are cultivated. Every acre of land yields 25 bags of paddy which is sold to the government department, CTNCSC Civil Supply Corporation. Vermicompost, panchagavya, mulching, farmyard manure , compost are used. Cows on the farm provide dung, bore well is used for flooding paddy field. Paddy and sugarcane crops are interchanged. Paddy and cotton is sown in the proportion of 2:1, paddy and pulses are sown in the proportion of 2:1. This is alternated with growing green manure for one season. He is part of a local organisation of 700 farmers that meets once every three months to share farming notes.

(Source: Communication with OIP)

P. ADAIKALARAJU

82/36, S.M.E.S.C. Colony, II Cross, K.K. Nagar (P.O.), Tiruchirapalli – 620 021, Tamil Nadu. Cell: 09443581704

The 4 hectare farm is located in Valanadu of Manapparai Taluka. Raju has been farming organically for the past two years. Paddy and cotton are cultivated using cow dung compost and he wishes to now experiment with mulch.

(Source: Communication with OIP)

A.DHANRAJ PATIL & ARIVAGAM TRUST

Arivagam Trust, 36 Thirumangalam Road, Santhaipettai, Lalgudi - 621 601, Tamil Nadu. Ph.: 0431-6541986, Cell: 09943018554, Email: humenreach@gmail.com, Web: www.tamilwriters.com

A. Dhanraj's 5 acre farm is located at Kovilady in Tiruraiyaru. He has been farming organically for the past 25 years cultivating paddy, banana and growing green vegetables for home consumption. Some vegetables are sold to friends at cost. Panchagavya, green manure, organic pesticides are prepared from 'bitter leaves' and used on farm. He also uses Cyanobacteria. Water is sourced through channels from river Kaveri.

ARIVAGAM TRUST has been working on organic farming issues for the past five years. They are linked to 15 NGO groups and 250 women groups. They work directly with 2500 farmers who are being slowly converted to organic methods. These methods are being introduced for paddy, banana, vegetables and herbals. Their approach is through trainings and advocacy. Some experiments in coordination with University of Bharadhidhasan, Trichy on Cyanobacteria in the vegetable gardens have yielded very good results.

Contact Person: A. Dhanaraj, Project Director.

(Source: Communication with OIP)

R. RAMAKRISHNAN

Vil. & Post Vaipoor, Tal. & Dist. Tiruvanamalai - 606 774, Tamil Nadu. Ph.: 04175-244791, Cell: 09787179096

The 9 acre farm is located at Vaipoor. He has been farming organically since 1998 before which he practiced chemical farming for 20 years. He grows 3 acres paddy, 2 acres sorghum, 4 acres sugarcane and vegetables for home consumption on 5 cents of land. Produce is sold to co-operatives and the Pasumai Angadi Green House in Erode. This has been set up by member farmers throughcontributory payment. He uses panchagavya, pusivariti (organic pesticide), cow dung, mulch, green manure, sanapai on the farm. When panchagavya is applied, paddy is 30% larger in size and there is 6-7 times increase in yield.

(Source: Communication with OIP)

S.A. DHARMALINGAM

250 Suneisandai , Taluka Senumpatti Bhavani, Dist.-Erode - 638 504, Tamil Nadu. Ph.: 0425-8258527.

The 5 acre land is located at Suneisandai. He has been farming organically since 1985 and converted fully in 1992 before which he practiced chemical farming for 30 years. Chili, papaya, pumpkin, local vegetables, banana, onion, tomato, brinjal and beans are grown on his farm. The vegetables and fruits are marketed through associations, banks and offices. Mulching, compost, man-pullu (earthworm) vermicompost and panchagavya are used.

(Source: Communication with OIP)

M. SHANTHIMANI

Uppupalayam, Kuppon (PO), Tal. Aravakkurchi, Dist. Karur, Tamil Nadu. Cell: 09994523911.

(Source: Communication with OIP)

NARAYANAN SWAMI

Kanakilianallur, Lalkudi Tal., Trichy Dist., Tamil Nadu. Ph.:0431- 2651143

Narayananan Swami has very recently started experimenting with organic farming. His farm is located in Kanakilianallur, Lalkudi. He grows paddy, bajra, ragi, chilli and cotton. He uses cow dung, panchagavya, EM and fruit toddy mixtures for applying on his farm.

(Source: Communication with OIP)

PALANISWAMY K.V.

Venkataswamy Illam, Kethanur – 641 671, Tal. Tiruppur, Dist. Coimbatore, Tamil Nanu. Ph: 04225 279220/ 279241, Cell: 09843059241, 09943979791

Prakash Paper Mills, Pattam, Pottapalayam – 630 611, Sivagangai District, Tamil Nadu. Ph. 0452 2465744, 3092767.

The 10 acres of Palaniswamy's farm are devoted to organic vegetable farming. He has been farming organically for the past two years before which he practiced chemical farming for 34 years. He has a variety of vegetables that are supplied to the market. He practices raised bed farming and supplies water for just 15-20 minutes per day. Pheromone and light traps are used for keeping away insects. Azolla is fed to the cows and the water is used for the vegetable plantations. Panchagavya is the main spray used. He uses fish solution for his vegetable garden. Old fermented butter milk is kept for 7 days and then sprayed on plants to stimulate higher flowering. This directly translates into extra vegetable produce. Vermicompost is used on the whole farm. He produces bitter gourd, snake gourd, ridge gourd, lady finger, tomato, gherkins, beans and drum sticks. The seeds are supplied to the local agricultural university.

(Source: Communication with OIP)

PARIYASWAMY

Pachaimalai D.M.O.S. Trust, 154/54A, Thiyagi Singaravelar Street, Thuraiyur Post & Taluk, Trichy District – 621 010, Tamil Nadu. Ph: 04327 222426, Cell: 099432 34363

Pariyaswamy is a practicing Sidha doctor. He has been working on issues related to organic farming since 2007. He grows his own medicines and herbs. The two acre farm has dozens of varieties of herbs and medicinal plants from which he makes medicines. He also has an herbal research unit and is involved in herbal cultivation, marketing of herbals, health exhibition and awareness programmes. He specialises in treatment of chronic diseases like asthma, kidney stone, peptic ulcer, diabetes, skin and urinary infection.

(Source:Communication with OIP)

HAND-IN-HAND

Environmental Protection Division, Flat 15/16, 1 Pinjala Subramaniam Street, T Nagar Chennai 600 017, Ph: 044-421 27623, Email: envi@hihseed.org, Web: www.hihseed.org

'Hand in Hand' has developed an innovative enterprise opportunity for rural women through supporting conversion of farm, garden and domestic waste into rich, organic manure using the vermicompost process. Two day training is given along with a 90% soft loan to initiate them into self reliance through vermicomposting. These units are able to generate as much as 2 tons of compost per month, fetching a market price of Rs. 3000 to 4000 per ton. There is a facility to market the end product under the collective banner of V-Compost, thus meeting vital ends of managing degradable waste, self employment and providing compost for farms.

(Source: Brochure)

A. MEENAKSHI SUNDARAM

No. 104, Karuneegar - Street, Kalasapakkam-Post, Polur Taluka, Tiruvannamalai - 606 751, Tamil Nadu. Ph.: 04181 - 241402

(Source: OFAI)

VALLALAR HOLISTIC HEALTH CENTRE

Town Centre: 206, Cherry St, Puducherry -1

Sales Centre: 186 Needarajappaiyer St. Puducherry -1, Ph: 2337478, Email: appa2008g@gmail.com, Web: www.pranacentrefreeservers.com

The centre offers organic foods along with natural healing treatments and health counseling.

(Source: Brochure)

SITHER. G

Agriculturist, Layco's Nature Food Shop, 71/1516, Vanakkara Street, M. Chavady, Thanjavur 613 001, Tamil Nadu. Ph: 04362-239788/272417, Cell: 09443139788, Email: sither_1960@yahoo.co.in

(Source: Brochure)

THE AHIMSAA RESEARCH FOUNDATION

87-B, Lloyds Road, Chennai 600 014, Tamil Nadu. Ph.: 044-28115768, Fax: 044-28115458

Contact: S.Krishnan, CEO & Research Co-ordinator

Meenakshi Sundaram is one of the pioneers of organic farming in Tamilnadu

SHRI MAHALAXMI ORGO AGRONOMICS

302, Hospital Road, Kavin 638 455, Erode Dist., Tamil Nadu. Ph.: 04256 240272 to 240274, Res: 04256 240275, Fax: 04256 240271

Contact: A.R. Shanmuha Sundaram

(Source:OFAI)

EXNORA INTERNATIONAL FOUNDATION

20, Giriappa Road, Chennai - 600 017, Tamil Nadu. Ph.: 044-8153377, Email: exnora@vsnl.com, Web: http://exnorc.org

Citizens' Waterways Monitoring Programme

(Source OFAI)

CENTRE FOR ECOLOGY & RESEARCH

538, Rani Vaikkal Street, Thanjavur 613 009, Tamil Nadu. Ph.: 04362 221410, Fax: 04362 220355

Contact: V. Palaniappan, Honorary Secretary

(Source: OFAI)

AURO ANNAM

Grace, Auroville 605 101, Tamil Nadu. Ph.: 0413-2622044, Res: 0413-2623391, Email: auroannam@auroville.org.in, margarita@auroville.org.in

Res: Auroannam Farm (Opp. Auro Orchard) Contact: Margarita Correa, Executive/Manager of Research & Demo Farm, technical expert in EM Technology, organic farming advisory, consultant on vermitechnology & bio pest control.

Auro Annam promotes organic farming, provides quality organically grown foods at fair prices, promotes EM technology for agriculture, for solid waste and waste water management, and for environmental rehabilitation.

Auro Annam:

– Is a unit of Auroville Exports Trust, Auroville Foundation.

– Is a member of the Bio-dynamic Association of India (BDAI).

– Is a member of Asia Pacific Natural Agriculture Netowrk (APNAN) and an authorized dealer of EM.

(Source: OFAI)

V. DHANAPALAN

Keela Othiyathur, Kutaur PO 611105, Kilvalur Taluk, Nagapattinam Dist, Tamil Nadu

Cell: 09443587352, 09345484315

(Source: OFAI)

A.C. PRABHAKARAN

Development Activities for Rural People, Plot no 23, EB Colony, K Pudur, Madurai – 625 007, Tamil Nadu.

Networking, training and creating model organic farms.

(Source: Nammalwar)

INTEGRATED EDUCATION & RURAL-URBAN DEVELOPMENT TRUST

Flower Cottage, Kotamavilai, Vanniyur PO, Kuzhituhurai – 629 163, Kanyakumari District, Tamil Nadu.

The trust is raising crops such as paddy, coconut, rubber and vegetables using organic manure. It is also engaged in education, documentation and networking.

(Source: Nammalwar)

P.R.Y. PRITHIVIRAJAN

Bharatha Seva Trust, Avvaiyar Eco Farm & Training Centre, PO Box 72, Paulo Freire Village, Pudukkottai – 622 001, Tamil Nadu.

(Residence: Avvai Farm, Vadavalam Post, Pudukottai – 622 004, Tamil Nadu.)

Prithivirajan trains NGOs on extension activities for farmers. He also manages a model organic farm. He has translated Erik van der Werf's book, Ecological Farming Principles into Tamil. (Source: OIP archives)

RESOURCE CENTRE FOR ECOLOGY, AGRICULTURE AND COMMUNITY DEVELOPMENT

Kaattaavilai, Kadayal, Kaliyal – 629 101, Kanyakumari District, Tamil Nadu.

Contact person: T. Francis

The Resource Centre maintains a kitchen garden on about 25 cents of land with crops such as brinjal, chilies, okra, cow pea, groundnut, sweet potato, amaranthus, gourds etc. Only organic manures like farmyard manure, green manure (mainly from glyricidia trees), neem cake, etc. are used. Pests are controlled using neem oil, garlic, custard apple leaves, cow's urine, etc. The results are encouraging and the yield is above average.

The Centre also raises fruit crops like pineapple, cherry, pomegranate, mango, plantain, jack, citrus, etc. with coconuts on 50 cents of land as mixed crops. Tapioca is grown on about half an acre. Mulching with coconut husk is practiced.

A small plot of medicinal herbs with several varieties is cultivated in the new office campus at Kaattavilai, Kadayal.

We are popularising vegetable home gardening among housewives, formed into self-help groups, in about 20 villages in Melpuram area, Kanyakumari District. We are also taking steps to popularise vermiculture and mushroom cultivation among farmers and housewives here.

(Source: Communication with OIP)

SUSTAINABLE AGRICULTURE ENVIRONMENTAL VOLUNTARY ACTION (SEVA)

45, T.P.M. Nagar, Virattipathu, Madurai – 625 010, Tamil Nadu. Ph.: 0452 2380082, Fax (pp): 0452 2604765 / 2300425, Email: numvali@vsnl.com

Contact person: P.Saravaran

(Source: Communication with OIP)

DR. S.K.GOPAL

Chief Training Organiser, Krishi Vigyan Kendra, Gandhigram Rural Institute – Gandhigram 624 302, Dindigul District, Tamil Nadu. Ph.: 0451 2452168 Fax: 0451 2454466.

Krishi Vigyan Kendra has used NADEP compost for fruit trees, farm forestry and for paddy. Dr. Gopal has also introduced organic farming in Anna District through training and demonstration sessions, lectures and meetings.

(Source: Communication with OIP)

NAVADARSHANAM

Gumlapuram, Thally – 635 118, Tamil Nadu.

Contact person: Dr T.S. Ananthu

Interests are research and documentation of organic and ecologically based agriculture.

(Source: OIP archives)

DR. A. R. SOLAYAPPAN

Founder President – Foundation for Organic Agriculture / Principal Scientist (Retd.) T.N.C.S.F / Agricultural Consultant, Foundation For Organic Agriculture, # 28 / B28, Algesan Nagar, Chengalpattu – 603 001. Ph.: 04114 226222, Cell: 09443331393, Email: arsolayappan@yahoo.com / arsolayappan@hotmail.com / foa_ars@rediffmail.com

(Source: Communication with OIP)

ECOSCIENCE RESEARCH FOUNDATION

Plot 98, Baaz Nagar, 3/621, east Coast Road, Palavakkam, Chennai - 600 041, Tamil Nadu. Cell: 09384898358, Email: sultanismail@gmail.com. Web: www.erfindia.org,

Contact: Dr. Sultan Ahmed Ismail

The earthworm is the pulse of the soil; healthier the pulse healthier the soil.

Ecoscience Research Foundation (ERF) is a trust initiated by Dr. Sultan Ahmed Ismail. Dr. Ismail has dedicated his life's work to the study of earthworms and its application to agriculture. A crucial component of organic farming practice is vermicompost. The magic begins when bio-waste, subsoil microbes and the earthworms come together under ideal conditions of temperature and moisture.

ERF is dedicated to improve the quality of life on earth by being friends of the earth. It believes that life can be made better by being friendlier to the environment one lives in. This objective is met with research, awareness programmes and the quest for newer methods to conserve the earth's precious resources. Dr. Sultan Ismail has been centrally involved with the Organic Farming Movement in India since its very beginning.

ERF offers services related to organic farming in the following areas: demonstration and assistance with land preparation, understanding of soil as a living environment, waste management, pest repellants, liquid foliar sprays, water management, compost preparation, local biomass and its optimum utilization, post harvest storage, animal husbandry, ayurvedic medicines for ailments in cattle etc. and of course the A to Z of vermicomposting.

The ERF website is a rich resource for understanding the world of earthworms, basics in vermicomposting and has a section devoted to FAQs on earthworms.

(Source: Communication with OIP)

P.B. MUKUNDAN

H. No. 92, Rajaji Street, Chingalpet 603 001, Dist. Kanchipuram, Tamil Nadu. Ph.: 044 27423902. Cell: 09382337818.

P.B. Mukandan has an organic farm and keeps a dairy of 40 indigenous breed cows. Five years ago, Mukandan made a trip all the way from Tamil Nadu to Rajasthan in search of indigenous, hardy cow breeds to start his dairy farm. On his first trip he collected 11 Tharparkar breed cattle from Bassi and Durgapur Gaushalas in Rajasthan. Subsequently, some locals helped him to scout remote villages in Jaisalmer and add 30 more to his collection. He has successfully established his dairy by selective breeding of these indegenous cows. He says it is ideal to introduce a fresh bull into the group after every three years; otherwise inbreeding causes deficient quality off-springs. He has recently obtained a Tharparkar bull from a line that has recorded 3200 liters of milk per lactation. He sources his fodder from Sundararaman's organic farm in Satyamangalam. The feed consists of ragi, makha, black and red gram kernels/powder. Groundnut cake and boiled bran are procured only from known sources to maintain the quality of milk and health of cattle. The cows average eight to ten liters of milk per day per lactating season.

The milk is sold locally at Rs. 20 per litre and he claims, the fresh milk (unprocessed) has a shelf life of 15 days in the refrigerator. There is no dearth of customers, who come every evening to his home to buy milk and at the same time pickup other fruit and vegetables that he grows organically. His expense per cow comes to about Rs. 50-60 per cattle head per day. He is presently trying to introduce an alternate feeding process whereby the cost will further be reduced to Rs.15 to 20 per day. He selected Tharparkar variety because it is a country animal and easiest to maintain.

On his organic farm he grows fresh vegetables, local paddy and sugarcane. His coconut palms yield 200 to 300 nuts per season. His technique of growing groundnut has been studied by the Agriculture University of Tamil Nadu, and has also been recognised with an award for innovation. This season, instead of sending the sugarcane to the mills, he extracted fresh juice on the farm mixed with lime and ginger. The packaged drink is being sold in Chennai very successfully- fetching him premium returns.

His views on organic outlets are worth noting. He believes that growing of vegetables organically along side dairy is worth exploring by farmers as consumers want fresh vegetables everyday. This can generate ready cash income everyday for the farmer. While most organic outlets only stock grain and processed/ semi processed products that consumers' do not necessarily shop for on a daily basis.

He believes that a little bit of planned and organized hard work in the initial stages on a farm can make the further running of the farm smooth. For example he has prepared a raised bed for vegetable growing. A plot of 8'x 70' with radish and beans gives him an income of Rs. 8,000 sowing. His distress over the plight of his fellow farmers who are in debt or struggling to make ends meet comes across very clearly in his articulation on how farmers are either misinformed or mislead by the proponents of synthetic farming, official agencies, pesticide and fertiliser industry etc. while others are plain lazy.

Even mechanisation in agriculture attracts his dissent, and he says, 'A farmer only needs small indigenous tools for his practices and not huge machines that are promoted as indispensable by manufacturers.' His faith in the bullock being a farmer's best companion is undeterred. He says, only Gandhi and the bullock have understood, served and worked in the interest of the farmer.

(Source: Tele-interview with OIP)

UPASI TEA RESEARCH FOUNDATION

Valparai – 642 127, Coimbatore District, Tamil Nadu. Ph.: 04253 235301, 235303, 235229, Fax: 235302, Email: upasitri@satyammail.com, director@upasitearesearch.org, Web: www.upasitearesearch.org

The United Planters' Association of Southern India (UPASI) established a tea experimentation station at Devarshola in the Nilgiris in 1926. Over the years it has grown into a premier organization for tea research with regional centres at Coonoor, Gudalar, Meppadi, Munnar, Vandiperiyar and Koppa. A Krishi Vigyan Kendra was established by them with support from ICAR in 1983. The tea districts of Karnataka too receive support from UPASI Tea Research Foundation.

UPASI organized two national meetings in the 1990s'on organic farming during the initial stages of the Organic Farming Movement in India.

UPASI has brought out guidelines for organic tea cultivation. Their website is a rich resource for information on the cultivation of tea.

(Source: Website and OIP Archives)

A. JAYACHANDRAN

Ariynur Village, Maduran thagam, Kanchipuram District, Tamil Nadu.

(Source: Communication with OIP)

MS. ALPHONSA AND MS. MARY

Aussi Project, Pottal, Kallidai Kurichi PO – 627 416, Tamil Nadu.

(Source: ARISE)

Interview with Sheela Rani Chunkath

Smt. Sheela Rani Chunkath (IAS), Chairperson and Managing Director, Tamil Nadu Industrial Investment Corporation Ltd., is a recepient of the Prime Minister's Award for Excellence in Public Administration 2008. Her search for poison-free food during her days as Chairperson of the State's Pollution Control Board led her to take up organic farming.

Nyla Coelho talked to her during the OFAI Trichy Biennial Convention. Her email: srchunkath@yahoo.com

Nyla Coelho: Tell us about the nature of your farm and the background to its beginning.

Sheela Rani Chunkath: My interest in organic farming took root while I was with the Pollution Control Board of Tamil Nadu. Being in a position to access and have first hand information on pollution levels across the spectrum: industries, water, soil, air etc made me think seriously about the food we were consuming. So my search for poison free food led me to look for organically grown produce. I realised that getting organic food was quite an effort because growing food organically was an exception. The general feedback was that, organic practice was difficult and not economical to growers. So I decided to take up farming to grow my own food.

The farm is a combined land holding along with many of my relatives and my daughter. We started farming organically since 2002. We grow vegetables and have plenty of assorted trees on the farm. Being the trickiest to grow short durational crops, not many produce vegetables organically. Farmers usually do not want to take chances with pests; hence spraying becomes an easy solution. But the irony is, it is vegetables that are mostly consumed raw or with very little cooking time. As a consequence, pesticides gain easy entry into the human food chain.

NC: Are there any special practices you follow or any difficulties that you have run into with your farm?

SRC: I find standardising organic inputs to be the toughest, because one formula doesn't seem to work for all. Inputs are in a way crop specific, so what to give which when can be a tricky proposition. The inputs we use are panchagavya, fish and jaggery solution, vermicompost, vermiwash, bio pesticides, sea weed. My woes are in the realm of green manure too. To this day, my success rate with composting has not reached encouraging levels. However my experience has been that, keeping good cattle, using organic seeds and good green manure inputs does well for the farm.

NC: Coming from an IAS background and in a top state administrative position, where did you pick up your skills for farming?

SRC: I agree that being in a position to have access to information and technical inputs, organic farming should have been quite simple, but in reality help, knowledge and information on organic farming came to me from local farmers doing organic farming and not so much from the government agencies who are the official bodies to be providing information and support on methods of farming. It was the farmers who knew on ground practicality, it was their knowledge and assistance that was the greatest help.

Sheela Rani Chunkath

NC: While being Chairperson of the Pollution Control Board, was there an occasion for you to take organic farming to a larger audience; did it link in any way to mitigation?

SRC: In fact my position in Pollution Control Board helped me to popularise organic farming to a great extent. I could see that the non point sources of pollution like agriculture where in chemical fertilisers leach into soil and water bodies could be greatly minimised. Organic farming could be an important agent for abetting and intervention. We conducted several inter departmental meetings with agriculture, forest, health, education, planning department and held exposure exhibitions for educating the farmer community and public, bringing in awareness.

The organic farming movement in Tamil Nadu has leap frogged. Many pioneers of organic farming are from Tamil Nadu. There is significant progress in the organic movement and number of farms going organic is steadily on the rise. Today in Chennai alone, you can find several stores keeping organic produce.

NC: What do you envisage as practical strategies for organic produce to ultimately reach every home?

SRC: I'm not very sure if all farmers who claim to be organic are totally so. If pesticide inputs are avoided while growing food, I think we are going somewhere in the right direction. It is important to have ethical cornerstones around which awareness building is taken on intensely. Organic farming is show cased well; people are taken on farm visits, to farmer markets, to expose exactly why high price for organic produce is justified. Growing organically may have no external chemical inputs, but is labour intensive and people have to be paid justly for their manual labour. If this ethical angle is drawn to public notice first hand, then I think organic produce would receive a fair price and good market.

Today organic farmers are forced to underwrite their produce because of lack of awareness and are forced to sell on the same scale as the one with chemical inputs. If the distinction is clearly brought out into public consciousness, it will tip the scales in favour of organic.

NC: Do you see a role for the NGO sector and farmer associations in this movement?

SRC: I think NGOs have a very pivotal role to play because campaigns, outreach, education and awareness are handled very well by them. They can also pitch in on the practical side for, presently, nobody is able to cope with fluctuations in supply.

NC: And, what about the Government?

SRC: Government should promote organic farming aggressively. Sikkim is one of the states, which is doing well. Their Chief Minister is known as the green Chief Minister. He has assured that all produce grown in Sikkim is organic.

Individaul State Governments should promote organic farming far more aggressively than is being done presently and support it with policy. If this is done, in a couple of years or so, production levels as with chemical farming can be achieved, simultaneously improving the quality of soil and moving towards poison free foods.

NC: As an organic farmer yourself, what is your ultimate goal?

SRC: As an organic farmer I would like everything on the table to be home grown and poison free. I also wish more people would get into home gardening, at least to meet part of their fresh greens needs themselves.

BHAVANA, SHARANAM

Village Action Group, Isaiambalam, Auroville – 605 101, Tamil Nadu.

(Source: ARISE)

C. SIVARAMAN

Thiruchitrambalam & PO, Via Auroville, Vanur Taluka – 605 101, Tamil Nadu. (Source: ARISE)

C. JEYAKARAN

Kurinji Organic Foods (India), Periyakulam Road, Gennguvarpatti – 624 203, Tamil Nadu.

(Source: ARISE)

JEAN WATSON, K.S. SUBBIAH

Mahatma Karunai Illam, Nilakottai, Dindigul, Anna District – 624 208, Tamil Nadu. (Orphanage, 8 acres, interested in OF)

(Source: ARISE)

K. KAMARAJ

Secretary, Vidiyal (Centre for Social Interaction), Kariappanpatti, Rasingapuram PO – 626 528, Madurai District, Tamil Nadu.

(Source: ARISE)

K.S. RAJANARAYAN & RAGHUKUMAR

Athreya, 2 23rd East Street, Kamaraj Nagar, Thiruvanmiyur, Chennai – 600 041 Tamil Nadu.

(Source: Communication with OIP)

K. RAMAN

PO T M Mangalam, Polur Taluka – 606 908, Tamil Nadu.

(Source: ARISE)

MECHTILD SCHUBERT

Service Farm, Auroville – 605 101, Tamil Nadu. Ph.: 0413 2671120 (Source: Communication with OIP)

R. KESAVARAJ

ARCOD (Association for Rural Community Development), Royakottai Dharamapuri District – 635 116, Tamil Nadu.

(Source: ARISE)

V. KRISHNAN

Pondicherry Nature Society, 7, Sorna Nagar, Arian Kuppam, Pondicherry – 605 007. Ph.: 0413 2600820

(Source: Communication with OIP)

VENKATA REDDY

Pattiraipallam, Kachirayapalayam, Chinna salem, V.R.P Dt.

(Source: M. Karthikeyan)

ANBARASU

Integrated Village Development Programme, Anjatti, Thenkanikottai, Tamil Nadu. NGO involved in soil and water conservation. (Source: M. Karthikeyan)

SMT. PREM ANAND

Correspondent, Vivekalaya School, 1560, Trichy Road, Coimbatore, Tamil Nadu.

(Source: M. Karthikeyan)

VANYA ORR

Earth Trust,

GCP Village, Dodabetta Sub PO, Ootacamund – 643 002, Tamil Nadu. (Source: Nammalvar)

ORGANIC CERTIFICATION IN TN FOLLOWING THE PARTICIPATORY GUARANTEE SYSTEM (PGS)

Tamil Nadu has 220 organic farmers registered through 20 farmers' local groups. Keystone Foundation and Covenant Centre for Development are the PGS Organic Facilitation Councils with 13 and seven grassroots level groups respectively.

Details of these local groups and their organic produce is posted at the www.pgsorganic.in

Western India

Goa

Interview with Fr. Inaz Almeida

Address: Our Lady of Fatima Chapel, Bironem, Valpoi, Goa.
Cell: 9420820726

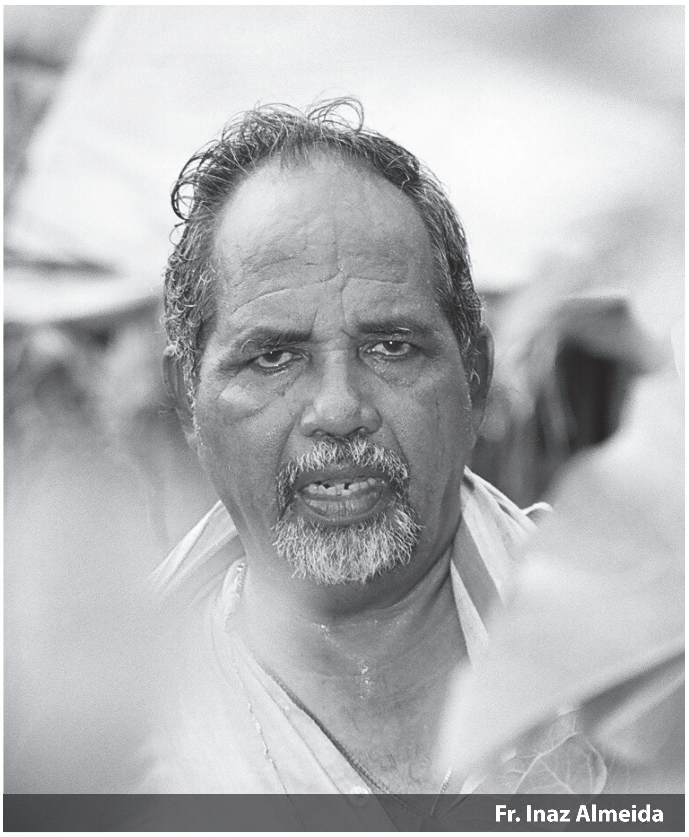
Claude Alvares: We would like to know about your work with EM, when it started, what are the results you got, what kind of difficulties you faced. Because yours is one of the few farms where a lot of EM is used. Other things like vermicompost etc. are not being used. You are using basically EM. When did you start Fr. and when did you come to know of EM?

Fr. Almeida: When I was in Japan in 1990, I met Dr. Higa at Jatami. They were allocating plots at the Jatami Centre for Organic Farming. I was not very well at the time and I could not concentrate so perhaps I found the subject a bit difficult to follow. But I was interested in the idea and so I brought the seminar papers to read. Later Dr. H. Prabhudessai from ICAR attended a seminar in Ahmednagar where he met Mr. Takara, the Japanese EM technician. He invited Mr. Takara to come to Goa to give a lecture on EM and fortunately Takara agreed to come.

But ICAR would not permit a seminar or lecture on EM because the scientists thought that EM contained bacteria imported from Germany. Being denied by ICAR, Prabhudesai approached me and I organized about 40 farmers including Mr. Mohan from Goa Velha and also some prominent farmers like Cesar, Luis da Gama, Dias etc. Takara explained very well how to make the primary and secondary EM mixture and also how to make bokashi. Hearing him I thought that this would be very good to teach farmers because all the resources and materials were available with the farming community throughout rural India.

That year the government gave us gladioli bulbs. Mr.Shripad Naik the Agriculture Minister then brought the flower technology to Goa so that we could capture the flower market. Earlier we were importing every day more than Rs.2 lakhs worth of flowers from Bangalore and other parts of India. Gladioli, tuber roses, zerbera and orchids were all being brought from outside when all these flowers can be grown in Goa itself.

Gladioli are seasonal and I planted them with bokashi and gave top spray with EM water. I got gladioli 1.1/2 metres in height and 14 flowers per stalk. The keeping quality was more than 10 days. Mr. Alex Alphonso of Garden Glory admired them greatly and said, ‘I am doing business in flowers for so many years but I don’t know how to grow them so well.’ Thereafter, we had a meeting of the gladioli growers and he gave witness about the qualities of EM. I became a supplier of these flowers and he gave me a good rate because the flowers were shining and the keeping quality was good.


Fr. Inaz Almeida

Later I added turmeric powder and they grew to 2 metres. The rhizomes were large. During an exhibition, I put the different flowers on a small table and the entire exhibition area was smelling of turmeric. All the Hindu ladies were surprised because they were using turmeric for cough. Mr. Jagdish Wagh, writer and promoter of wildlife, and Mr. Vishnu Wagh did a write-up about our Pilar Nature Farm after which many people started enquiring about EM. Dr.Prabhudessai started bringing many farmers – both big and small – to see the Pilar farm and I explained about EM to them and thus made it famous.

Small farmers nearby are also using EM. Every 15 days they arrange farmers’ meetings here. I explain to them how to make and use EM and how to spray it. Even some of the top officers from ICAR come here to learn about EM. Now they want me to give a lecture on EM at ICAR. Earlier they were against it, saying it was not a true technology, etc. but now everybody is convinced about EM.

Almost all the directors of the various government departments – ICAR, Forest Department, etc. have come here to see the jatropa plantation. By using EM, I got the fruiting in jatropa within 5 months. People who visit this farm are surprised how I got so much jatropa, and how quickly they have grown and have got flowers after 5 months. They say it takes them one year to get flowers.

I require a lot of paine [seed cake] manure, which is expensive at Rs.6 or 7 a kilo in the open market, or the not-so-good quality provided by the government at a subsidized rate of Rs.3 or 5 a kilo. I feel therefore that if we grow jatropa on the wastelands, we can get oil cake also. With that, we can make bokashi commercially and offer it at a cheaper rate to the people.

CA: You are using fermented EM as a compost or as a base application or how?

Fr. A: As you know the cost of EM has gone up to Rs.240 a bottle. It was Rs.60 initially, then it became Rs.90, then Rs.120 and Rs.150. Now it has been increased to Rs.240. I therefore make 40 bottles extended EM for agriculture with a little bit more jaggery. I also use it for bokashi. For one bucket of rice bran, we use 1 kilo of neem cake, 1 kilo of poultry manure and 1 kilo of rock phosphate.

We sometimes use fish manure which is difficult to get although it is better. I will give you a formula with fish manure which you can propagate like wild fire. Put fish waste in a bucket and add 1 kilo of local salt. Cover it well with plastic, tie the covering properly and keep it for 25 days. After 25 days, stir it with a stick and pour out the liquid in an aluminium vessel and allow it to settle. Transfer the top liquid, leaving out the sediment, into a bottle and you can sell it for Rs.300 per bottle.

This can be used for grape farms and even for cashew, mango, jackfruit and avocado trees which are not giving proper fruit yield. So for 10 litres of this liquid, we add 20 ml EM and Javalite rock powder, which is a cheap source of amino acid. This mixture should be sprayed on the trees, leaves and on the flowers when they first appear. You will get very good results. The trees flower very well and the fruit yield is so high that almost 75% gets wasted. The fruits appear 20-25 days before time and they are very sweet and good. As you well know if your mancurad mango crop enters the market 25 days before the others, it is very profitable.

Some hoteliers like Martin's Corner, a restaurant at Betalbatim, also started using EM to treat bad smell. Many foreigners go to this restaurant. Martin's Corner looks very nice in front but at the back it was very bad because the sewage water was stinking. So I told them to put extended EM. They are now regularly using extended EM and have solved the problem they were having with their neighbours.

At the Vasco garbage site they are using EM5. You must add a quarter (pav) vinegar, a quarter good cashew liquor, a quarter original EM, a quarter jaggery water, plus a little water, some garlic and chillies. When diluting, for 10 litres of water, 20 ml of this EM solution is added and sprayed on the garbage. It destroys all the mosquito larvae and kills the bad odour. Earlier they were spraying molasses, cow dung and other things but it did not work well.

For bokashi, if you do not have fish waste, you can use rice husk, neem cake, tobacco and turmeric power. Make 1 kilo and keep it for 7 days. It must be covered with a fine muslin cloth. Keep everything to soak for a few days and then stir it. Then you can use the thick sediment for trees and flowers. Put l litre of water in it, add a little Javalite powder and watch the results. Use it on any type of tree or flowers and after 15 days you will see that the leaves on the trees and flowers increase greatly. It greatly improves the quality and the quantity of the fruit.

Recently I had been to Nagapattinam. There at the tsunami rehabilitation site, they have constructed houses which are almost touching one another and the toilets are very bad. A doctor from Auroville Ashram of Pondicherry used EM spray on the urinals, which were stinking and the situation improved greatly. Even dead bodies were sprayed with EM. Now the government is planning to set up a Rs.20 crore EM project in Tamil Nadu as part of the Rehabilitation Centre.

Even for indigestion and stomach problem, a capful of extended EM works wonders. If you add it in the bath water of children who have boils, it is very good. The Queen of Sheba and other royal persons used to bathe in milk. Milk contains lacto bacillus. The same is the case with EM. It is good for the skin if you add a capful in the bath water. Also during menstrual periods of ladies and after delivery, it is very useful to control bad odour. In the maternity homes, the sisters are adding EM to the bath water and to the water used for washing clothes and linen.

I know one gentleman who every year used antibiotics worth Rs.90,000 which he imported from Thailand for his 1 hectare aquaculture pond. Now he has changed to EM and it costs him Rs.25,000 only for the same purpose.

EM is also being used to treat AIDS patients and for cancer treatment. You take two leaves of aloe vera, cut off the tips and edges and grind it to a pulp in the mixer. Then you add some honey, 2 teaspoons of extended EM, 8 teaspoons of feni and some safed mutri to this mixture. Safed mutri is also good for ladies who have given birth since it is strengthening. It is also useful for men with less sperm count. This mixture is given thrice a day to cancer patients for 10 days – morning, afternoon, night. It has to be stopped after 10 days and restarted after a gap of a few days.

At Auroville, they also make agarbatti from vanilla treated with EM. This feni here, has been given a vanilla flavour by putting the pods into the feni. Its colour is also changed by the vanilla. It gives an added value to the farmer since he can get Rs.80 to Rs.100 for the plant. This is the result when the vanilla has been treated with EM. The feni is sold at Rs.60-70 a litre.

Last year I was in Madagascar. I showed them how to treat vanilla plants with EM. However, our technology and production of vanilla in Goa are much better than theirs in terms of flavour and oil content. Natural vanilla is superior and pure. The synthetic vanilla leads to cancer. First they were charging Rs.15,000 for vanilla and now it has gone up to Rs.38,000.

Finally you can make pesticide from Congress grass. First chop it into pieces and then ferment it with EM. Then you extract the juice.

I have prepared a booklet that I give to all the people I teach.

Organic Farms

CAESER GOMES

78 Guirdolim, P.O Chandor, Salcete, Goa. Ph.: 0832 2784787

Caeser Gomes lives with his wife and daughter in the village of Guirdolim, about four kilometres away from Chandor (South Goa). The following is his account of his experiences with organic farming:

I have been doing organic farming from the year 1976. Prior to that from the year 1952 I was doing chemical farming. However, as years went by, I learnt to my dismay that synthetic fertilizers were ruining my soil and plants, infesting them with plenty of unknown diseases.

From 1952 to 1976 I used chemicals and the yield did go up fantastically. So much so that I was awarded a gold medal from the Portuguese Government for the highest paddy yield in Goa in 1956. By 1967, my paddy field became the most visited field in the area. With 15 kilos seed I produced 4000 kilos paddy per acre – an all India record!

But then, the yield started falling gradually despite higher doses of fertilizers. That was when I realised that chemical fertilizers were killing the micro-organisms which enrich the soil. I then switched on to horticultural crops, and decided to stop once and for all chemical fertilizers and go organic.

In the old days labour was cheap, so I grew paddy. Now labour is expensive, and so I have taken up to growing cash crops viz. coconut, pepper and arecanut. The pepper plants grow around the trunks of the coconut trees. I use preroria as a cover crop. It gives nitrogen to the soil as well as prevents unwanted weeds. The fallen leaves act as mulch. I have no workers on the farm and therefore hire casual labour. I had brought California earthworms, but they seem to have disappeared. I now have local earthworms and their castings have made the soil soft and porous. After the rains I get water from the irrigation canal which comes from the Paroda lake/dam.

My four principles in organic farming are:

1. No Cultivation: No ploughing or turning the soil. For centuries farmers have thought that the plough is essential for growing crops. However, non-cultivation is fundamental to organic farming. The soil cultivates itself naturally by means of penetration of plant roots and the activity of micro-organisms, small animals, and above all, the lowly earthworms and termites – both farmers' friends. If earthworms go 10 feet up and down in the soil, where is the need of cultivating? There is no plough in the world that goes 10 feet into soil.

When the soil is cultivated, the natural environment is altered beyond recognition. The repercussions of such acts have caused the farmer nightmares for countless generations. For example, when a natural area is brought under the plough very strong unnecessary weeds come to dominate the vegetation. When these weeds take hold, the farmer is faced with the nearly impossible task of weeding each year.

The usual way to control weeds is to plough the soil. But when you plough soil, seeds lying deep in the soil, which would never have germinated otherwise, are brought up and given a chance to sprout. Furthermore, the quick sprouting fast growing varieties are given the advantage under these conditions. So you might say that the farmer, who tries to control weeds by cultivating the soil, is quite literally, sowing the seeds of his own misfortune.

Caesar Gomes is a well known organic farmer who has not touched chemicals for years.

Thus, the only sensible approach is to discontinue the unnatural practices, which have brought about the situation in the first place. Cultivation of the soil should be discontinued.

2. No Chemical Fertilizers: Farmers interfere with nature, and try as they may, they cannot heal the resulting wounds. Their careless farming practices drain the soil of essential nutrients and yearly deplete the soil. Left to itself, the soil maintains its fertility naturally, in accordance with the orderly cycle of plant and animal life.

Organic remains of plants and animals accumulate and are decomposed on the surface by bacteria and fungi. With the movement of rainwater, the nutrients are taken deep down into the soil to become food for micro organisms, earthworms and other small animals. Plant roots reach to the lower soil strata and draw the nutrients back to the surface. If you take a walk in the wilderness and see the giant trees that grow without fertilizers and without cultivation you will understand why the fertility of nature is beyond the reach of our imagination. Our farm soil should be like that of the forest floor.

3. No Weeding by Tillage or Herbicides: As weeds play their part in building soil fertility and in balancing the biological community, they should be controlled and not eliminated. A good legume ground cover interplanted with crops like coconut, arecanut, banana, nutmeg, cinnamon, cloves, pepper will effectively control weeds.

If measures like mulching (recycling farm wastes), sowing legumes like Preroria, are practised instead of using man-made chemicals and machinery, then the environment will move back towards its natural balance and even the most troublesome weeds can be brought under control.

4. No Dependence on Pesticides: From the time that weak plants develop as a result of such unnatural practices as ploughing and chemical fertilising, disease and insect imbalance become a great problem in agriculture.

Nature, left alone, is in perfect harmony with all things. Pests are present but do not occur in nature to an extent which requires the use of expensive poisonous chemicals. Instead cheap biological pest control can be adopted. Neem, curry leaves and tulsi are insect repellents. Cow urine and soap solution also keep pests away, especially on roses.

For paddy, a plant protection measure for diseases like bacterial leaf blight of rice is the spraying of cowdung slurry. Seed treatment with cowdung also reduces diseases of rice. Dipping of vegetable seeds and seedlings in haldi and hing powder reduces wilt diseases.

Similar low cost technologies are available for all crops under different farming situations.

These four principles of organic farming – no cultivation, no chemical fertilizers, no weeding and no pesticides, comply with natural order and lead to replenishment of nature's goodness and bounty.

(Source: Communication with OIP)

STEPHEN PEREIRA

Mandovi Farms, Birondem, Satari, Goa. Phone: 0832 2436142, Cell: 942388502. Email: spereira@sancharnet.in

Amaro Rosilda Apts, Opp. Nirmala Trust of Education, Altinho, Panjim – 403 001

Stephen Pereira has two organic farms separated by a distance of one km. The horticulture farm is in the village Bhirondem admeasuring 19 acres and situated on the banks of the Mahadei River and the rubber plantation admeasuring 51 acres situated in Village Copordem. The rubber plantation was started in 1983 and the horticulture farm in 1984. Both are organic farms and are yielding rubber and mixed horticultural products.

Over the years the farms have gone through major changes.These changes have contributed to the farms doing well culturally and financially. It would be pertinent to look into these changes which have contributed to the overall performance of the farms.

Stephen came to know of the benefits of organic farming from Claude Alvares and after due deliberation decided to convert both the farms to organic. Mandovi Farms which grows fruits, spices , coconuts and areca nuts went through the procedures of converting into an organic farm over a period of 4 years. First the application of chemical fertilisers was discontinued and only fertilisers such as cowdung, poultry manure were used. In order to make cowdung available a few cows were purchased. However when the dairy project meant a new area of knowledge to be learnt and used, it was discontinued and only two buffaloes were maintained for making cowdung available. In order to meet the need for organic fertilisers cowdung, steremeal, bone meal and other such fertilisers are used. Later on the sprinkler system was adopted as a response to shortage of local labour. Over the years many practices were introduced to make the farm truly organic and to make the operation profitable.

In order to get large quantity of manure a way had to be found to have inhouse production of fertiliser. For this purpose vermicomposting was adopted and now the farm produces 10 tonnes of vermicompost per year. The farm also uses EM a very effective micro organism which multiplies bacteria in the soil and is a very effective soil enhancer. Apart from these, the liquid fertiliser preparation 'Panchagavya' is also used effectively. One of the biggest drawbacks in farming is the non availability of trained personnel and now even untrained workers are not available. The farm is now operating profitably but not highly profitable as it should have been as there are many areas where govt. help would make the operation even more profitable.

The rubber plantation is faring well under organic farming methods. Every year poultry manure and cowdung are used to enable the trees to yield better harvest. But what is most astounding is the fact that local worms have proliferated due to non application of chemical fertilisers. Their castings are all over the farm and a rough estimate of these castings should be about 10 tons per year. There were no worms when chemical fertilisers were used. In fact the soil was unfertile and every year more fertiliser was used than the previous year. The birds and other fauna are abundant in both the farms since turning to organic methods.

(Source: Communication with OIP)

FRANCIS X BORGES

47-2, Gongurem, Assagao – 403 507, Goa. Phone: 0832-2268822.

The organic farm of Mr. Francis Borges, a teacher, is now actively being tended by his wife, Philomena and daughter, Christabella, who he says have the time. He pitches in only after work hours and during holidays.

It is located at the above address and is about 1500 sq. meters in size. Flowers, ornamental plants, chickoos, lemon, bananas, papayas, coconuts, bale fruit and passion fruit are grown. Vegetables grown are ridge gourd, bitter gourd, bread fruit, brinjal. Spices grown are turmeric, black pepper, nutmeg and cinnamon.

They converted to organic and natural methods in 1987, prior to which synthetic fertilisers were used. Having switched over and, tasted the goodness in quality, flavour and keeping time (shelf-life), nothing has induced them away from this practise. They get enough produce from the farm, sufficient for their everyday family needs. Lemon which grows in surplus is processed into pickles and sold.

The Borges family finds this method to be natural, sustainable and of great interest. Vermicomposting was started on the farm in 1991 and continues to date. Bio fertilizers such as neem cake, cow dung, soil, bone meal, EM are purchased locally. No special pest control is used to protect the farm from pests. It is left to the wise ways of nature.

The farm faces certain difficulties. Since this method of farming requires plenty of water, with well water levels receding, watering is reduced to the minimum during summer.

Rodent attack (burrows) causes some damage to the roots of even well growing plants.

The best thing they feel is, organic foods can be consumed without fear and now the neighbours too are slowly beginning to go organic in phases.

(Source: Teleinterview with OIP)

DR ARUN GOPAL RAO LOKARE

Bhata Band, Maina, Quepem – 403 708, Goa. Ph.:0832-2659926

Lokare is a middle aged doctor who gave up medical practice to work on a farm. When he started farming he used both organic and inorganic inputs. But later he came across Fukuoka's One Straw Revolution and realized that he had to change his ways since as he says, 'Fifteen years of chemical farming is enough to completely destroy the soil. The only alternative was to give up chemical farming and bring the soil back to life.'

The changeover reduced the yield initially by 50 per cent, since it takes time for the soil to recoup. Now the yield is 75 per cent of what it was before the transition.

Lokare's farm is situated in a hilly area deep in the village of Maina, Quepem. Lokare does farming on about 16 acres of land.

Cropping pattern:

Plot I – 3 acres, banana, arecanut, coconut.

Plot II (self-irrigated) – 1 1/2 acre, banana, and areca nut.

Plot III – 2 1/2 acres, banana, arecanut;

Plot IV – 8 acres, cashew.

First he planted banana. When the banana trees grew he planted arecanut and coconut saplings, since these saplings need shade for their growth. He has many varieties of bananas viz. Saldhati (duration of season – 12 months), Mysore mittala (13 months), Sona keli (22 months) and Bonda bali (12 months).

The yield of bananas is around 2000 bunches per year. He finds that organically grown bananas are tastier than those grown chemically. Organic farming has also reduced bunchy top disease substantially. Fungal disease which attacks arecanut, coleraga, is very negligible. No fungicides are used as it is not necessary in organic farming.

His other crops include sapota, mango (30 grafts) and cashew. He also grows cow pea (alsande), Fezaon (another variety of cowpea) and chillies. On plot III he also grows tur dal.

When making the switch over to organic farming, Lokare got labourers to collect 3000 local earthworms from the surrounding area and bring them to his farm. 200 labour hours were spent to do this. He covers the land with dried leaves, some of which are collected from the surrounding area, grass and cowdung. Seven to eight kilos of cowdung are used per tree (for arecanut). The leaves from the river bed are also collected and strewn on the farm. No ploughing is done except in the chilly plot where he uses a power drill. Weeds are cut down and left as mulch. It is observed that, as the soil of coastal area contains no potash, organic potash needs to be used to get better crops.

Lokare has developed a few homemade recipes for pest control. He prepares neem based pesticide by mixing 75 per cent neem oil with 25 per cent alcohol (available in any medical store). He recommends 2 cc of this solution with 1 litre of water to be sprayed on the plants. Other pesticides that he uses are cow urine (50 ml in 10 lts of water) and Achook – a neem-based powder. He also uses a light trap. For this he places a lamp under which he keeps water with kerosene. The insects attracted by the lamp fall into the water and die of suffocation under the layer of kerosene.

He uses amrut pani (a bacterial activator) which is prepared by diluting two kilos cowdung in 10 litres of water and adding 20 grams of honey and 10 grams of homemade ghee. The mixture is left out in the open for 24 hours and the activator is ready to use. This is also sold commercially under the name Cowng Tea (cowdung tea).

Water is no problem since there is a spring on one side of the plot and a river on the other. However for efficient farming, the watering is done by sprinklers. Lokare has 96 sprinklers on his farm (90 fixed and six moving) spaced at 12 x 18 m. He uses a 10 HP two stage pump and it takes him four hours a day to irrigate the farm. For his chilli plot he uses a horizontally fixed pipe perforated with holes of one millimetre diameter. Plot II is self irrigated with a maze of channels dug around the plants. The water from a spring flowing from the upper portion of the land is stopped by a bund and channelised into the maze on plot II thereby irrigating the plants. During the rainy season the same channels serve as a drain which keeps the plants from drowning.

The produce of his farm is sold to the Goa Bhagyatdar Society leaving some for home consumption. However, it is sold along with other produce of other farmers that may be chemically grown. So there really is no way that consumers will know whether what they are buying is organically or chemically grown.

Goa is yet to have a farmer's collective that specially markets organic produce. Many farmers in Goa are shifting to organic farming for their horticulture crops. However, when it comes to paddy most are reluctant to do so as they consider it a great risk.

(Source: Communication with OIP)

GOVIND MORESHWAR PARSEKAR

Mandrem - 403 527, Goa. Phone: 0832 2247281, 2247 223, Email: sourabhanant@hotmail.com

Parsekar has been farming for over three decades now. In 1975 he planted few seedlings of coconuts on a barren piece of land situated 2.5 kms from his residence. Despite use of chemical fertilisers the result was not good due to shortage of water.

In 1989 he came across an article on organic farming written by a well known agronomist, late Prof Shripad Dabholkar. After reading the article he decided to experiment. Till then he did not know anything about 'Do nothing' theory of Masanabu Fukuoka but unknowingly he followed him. He bought some cow dung manure from a dairy unit, dug small pits in open space between coconut trees, filled them with cow dung manure and planted banana suckers. The banana

Govind Parsenkar is a confident organic farmer in north Goa who has no problem selling all his output at his farmgate

trees provided lots of agricultural waste which was used for mulching. Although no additional water was given to existing coconut trees but because of banana plantation their health improved and they started giving nuts. Today he uses all the waste of coconut and banana trees for mulching. It retains moisture in the soil, protects earthworms from their natural enemies and in due course is converted to powder which mixes with the soil.

Parsekar's farm is today organic and sustainable. Today he does not purchase any manure from outside. His two cows provide sufficient quantity of bio-gas to cook food for 6 persons. The slurry that comes out from the bio-gas plant is directly used to decompose agricultural waste.

Coconuts and mangoes are the main crops. The total area under these crops is 15,000 sq. m. The whole area is under drip irrigation. Black pepper vines are grown on coconut trees. Between coconut trees he has planted chikoo, banana, areca nut, pineapple, lemon, guava, papaya, drum sticks, nutmeg and breadfruit. All these trees are giving fruits. Open space between mango trees is used to grow seasonal vegetables like ridge gourd, cucumber, pumpkin, okra, spices like turmeric, ginger and chili. Since chillies and ginger are grown in partial shade of coconut and mango trees, whose large roots impede penetration of chili and ginger roots, Mr. Parsekar has found it beneficial to grow them in polybags. The polybags are filled with a mixture of vermicast, cow dung and soil. He gets a good crop of chilies and ginger all the year round. He also grows turmeric and banana for sale and maize and cow pea for fodder.

The farm produces about 10,000 coconuts per year. They are sold in retail after dehusking. The husk is used for mulching. It retains moisture in the soil and stops soil erosion during heavy rain. Within two years the husk is converted into fine powder which is absorbed by the root of the trees.

Since he does not use any pesticide there are numerous ants in the soil. They make the soil porous but they also cause problems while raising vegetable seedlings like cabbage, cauliflower, chilies, onion etc. So he has made some tin sheet trays and keeps these trays on iron stands with their legs in coconut shell filled with water. The trays are filled with mixture of soil and organic manure. The ants cannot reach the trays because of water in the coconut shells. Once the seeds have germinated the trays are kept on the ground. There are red weaver ants on the trees which are also put to use. They are picked from a tree and then spread on other trees. Soon they colonise the tree and defend the crop from other pests. He says, 'The lemon trees are protected from pests by these red weaver ants. White ants are also useful in organic farming. They convert organic waste into soil. They never eat live roots.' He has white ants hills on which there are coconut trees and black pepper vines and both give good produce.

To get rid of fruit flies he makes use of empty bottles of mineral water to trap these insects. Two holes are made on the upper side of empty mineral water bottles. The lower part of the bottle is filled with water containing few drops of insecticides. Little cotton is made wet with few drops of methyl eugenol and kept in a small plastic bag which hangs from the lid of the bottle. Methyl eugenol attracts the male fruit flies which enter into the bottles through the holes made on the upper side of the bottle and fall into the insecticide solution kept in the lower part of the bottle. Thus all male fruit flies die and breeding is curtailed. This way without damaging the environment these harmful insect are eradicated. Such bottles are hung in different parts of the farm.

Rain water harvesting is practised on the farm with pits being dug perpendicular to the slope in several places on the farm. Initially the farm had a water problem, but now because of consistent water penetration over the years, the water table has risen and the farm now has water even in May.

Parsekar has used simple innovation, improvisation and practicality to his advantage.

(Source: Communication with OIP)

PEACEFUL SOCIETY

At Honsowada, Post Kundai – 403 115, Goa. Ph.: 0832 2392236, Fax: 0832 2392382 Email: peaceful_goa@bsnl.in, peacefulsociety@gmail.com, Web: www.peacefulsociety.org

Contact: Kumar Kalanand Mani, Executive Secretary

Peaceful Society is an initiative whose work is directed by Gandhian principles. The organisation is experimenting with natural farming on its 4 and ½ acre campus since 1990 by improving the quality of soil and enhancing plant diversity. The population of on farm earthworms has been maintained. Mulching and applying compost to the entire area are regular practices. The farm mostly depends on organic manure generated on the campus, thus not disturbing nature by way of bringing in organic manure from outside. It has achieved self-sufficiency in water through harvesting it during the monsoons, minimising use for irrigation and taken appropriate steps towards preventing its evaporation especially during the summer months. It grows mango, cashew, areca nut, spices, vanilla, banana and vegetables.

The campus is a venue for regular local, regional and national level trainings and meetings. Peaceful Society organized the first meeting in Goa on organic farming.

(Source: Communication with OIP)

DR. H. R. PRABHUDESAI

Training Associate (Agronomy) ICAR, Ela Old Goa. Phone: 0832 2285475 (O), 2423135 (R), Email: hrdpnet@rediffmail.com

Dr. Prabhudesai has been a propagator of organic farming practices at the ICAR Research Complex, Ela, Old Goa, since 1988. He has conducted several training sessions, workshops, seminars on INM, IPM, standardisation of vermiculture units/structures to suit local situations and recent frontier areas like effective micro organisms which he has been propagating since 1999. Till date, he has imparted hands-on training sessions to over 400 farmers, entrepreneurs, youth, self help groups, NGOs and interested people on the concept of organic ways of food production.

He believes that the organic farming sustainability of farm encompasses various aspects which include crop diversification based on available natural resources, use of eco friendly techniques like green manuring, mulching, crop rotation and harnessing locally available flora and fauna for the benefit of producing safe and healthy food.

(Source: Communication with OIP)

V.V. BHATE

M/s Bhate Farm, Near Saptakoteshwar Temple, Narva Bicholim – 403 505, Goa. Phone:0832-2462763

Grows arecanut, cashew, pineapple, pepper and betel leaf.

(Source: Miguel Braganza)

NEVIL ALPHONSO

Baga – Cotombi, Quepem, Goa. Phone: 2857320/ 2759132

Works with the dept. of Agriculture. His expertise is available to individuals and groups who wish to set up organic farms, switch to organic farming or improve farming practises.

(Source: Communication with OIP)

AMBROSIA ORGANIC FARM

House No. 116/A, A.P. Kolaindre, Chandgad Taluka, Kolhapur, Maharashtra. Cell: 09822139967, Email:saladbaba@yahoo.co.in

(Ambrosia farm though located in Maharashtra has most of its clientele in Goa.)

Baby Phimister and David Grower's Ambrosia Organic Farm is an excellent example of what can be achieved on marginal land given enough time, money and water.

Situated atop the Western Ghats, half way between Amboli and Belgaum at Chandgad, the farm enjoys a cool climate and adequate rainfall. They started thirteen years ago to develop a stony hillside that barely supported grass, by cutting terraces and making bunds to prevent the soil being washed away by the monsoon rains. They planted the bunds with banana, cashew, neem, bhendi and glyricidia. They began making compost from anything they could lay their hands on – sawdust, leaves, fish scrap, farm waste, restaurant garbage, poultry litter and even sea-weed from Anjuna beach. For the first two years nothing much grew and the rice that did was yellow and stunted. The entire yield from one hectare was just one sack of rice.

Baby Phimister supplies all her organically grown salads to Goa's restaurants and hotels

Then they built a 'worm house' containing five concrete beds measuring 4x1 meter and 20 cm deep at a cost of Rs 1,00,000 and with a starter of 4 kg vermiculture they embarked on vermicompost production.

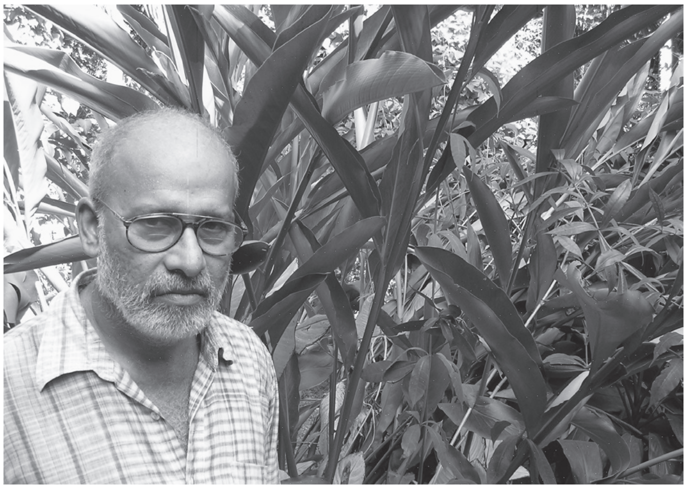
Eight years on, this facility now provides with more than 30 tons of high grade fertilizer every year making the farm self-sufficient in terms of organic inputs. The vermibeds are charged with fresh gobar and partially decomposed organic matter. Vermicompost is produced in a quarter of the time that it takes to make conventional compost, involves less labour and costs about Rs. 250 per ton to make.

They keep 20 livestock, 4 bulls for ploughing, 4 buffalos and the rest being non milk yielding indigenous variety of cows to supply essential gobar to the earthworm unit and the bio gas unit for cooking and light.

Together they sought to fill a niche market, catering to foreign tourists' tastes. They experimented with many English vegetables and failed with most, chiefly because the climate is not cold enough. Fortunately however, they were successful with lettuce, the most important ingredient in the making of salad, which is a 'must' for Europeans during summer and when traveling in hot countries. They now grow 12 varieties of lettuce from October – May, as well as radish, cherry, heritage tomatoes, parsley, basil, rucola, all of which they supply directly to many of the best restaurants in the north Goa coastal belt.

By operating a direct marketing policy, David has been able to earn enough to keep the farm solvent, although this has meant doing their own transport, storage and delivery, at considerable expense. In the short life time of this farm, diesel has risen from Rs 8 to Rs 34. Fuel and maintenance of the farm's two vehicles is the second largest expense after labour. They employ eight full time workers and bring in extra people when needed.

Ambrosia Organic Farm has linked up with other organic farmers in the neighbouring states in order to source a more comprehensive range of organic food. Ambrosia lends its label to local organic farmers produce like channa dal, moong dal, sunflower oil etc. The break up of price share going to the farmer being 50% of the marked up price, 20% to30% for the retailer inclusive of tax and less than 20% accrues to Ambrosia after considering packaging transport and delivery.



Ajit Malcornekar has carefully nurtured an organic farm on ancestral property near Ponda, Goa.

Ambrosia products are sold from five outlets in North Goa. Ambrosia believes in maximum benefit from produce going to the farmer.

One noteworthy success has been 'Kupli' wheat grown by Srinivas Bargel of Sangli district and now marketed by Ambrosia in Goa. Though laments David, 'We may not be able to continue with Kupli for long, since the buying price from the farmer is presently Rs. 35 per kg, and it may not have many takers at high rates.'

'Kupli' is traditional, high value wheat that for nutrition and taste is vastly superior to any high yielding variety wheat in the market. 'The only problem,' says David, tongue-in-cheek 'is that once you have eaten Kupli roti, you can never enjoy ordinary wheat again.' Only time will tell whether the palate will rule the pocket!

Ambrosia is committed to promoting traditional varieties of grain because they have realized that in order to achieve a reasonable 'organic premium,' food needs to be more than just organically grown, it needs to be inherently better. One example of this is the 'Dorga' rice that is grown in the monsoon season. Tri-coloured, glutenous, scented and priced at Rs. 50 kg. 'Dorga' rice has become very popular with Ambrosia's customers.

Ambrosia Organic Farm owes its survival to the foreign tourists who live for extended periods of time in Goa, and who greatly appreciate Ambrosia's existence. With demand out-stripping supply, the future looks bright for this little farm.

(Communication with OIP and tele-interview)

AJIT MALKERNEKER

P.O. Box 31, Cudchodem – 403 706, Goa. Phone: 0832-2616231

Ajit and his (German) wife, Doris have worked their 50 acre farm in south Goa without chemicals for the past twenty years. The couple have worked on the farm themselves and also used hired labour. The farm produces pepper, coconut, cashew (nuts and liquor), areca nut and banana. But there are dozens of other trees including breadfruit, passion fruit, papaya, etc. The farm in fact resembles a forest closely. Through the day one can hear the sound of birds who find the farm a haven.

(Source: Communication with OIP)

AMEET SAVANT

A3, S3,Vijaynagar Housing Society, Corlim,Tiswadi, Goa-403 110 Phone: 0832-2284640 , Cell: 9850068209 Email: savant@greenwealthagro.com

Green Wealth Agro is the organic farm of Mr. Ameet Sawant. It is located at the foot of the hill at Copodem village, Valpoi. Ameet comes from a farming family and has been practicing organic agriculture on his 8 acre farm since March 2004.

Ameet is a young man in his thirties holding a MBA degree who quit his profession to pursue his interest in farming. Vanilla plantation, coconuts, cashew, mangoes, jackfruit, black pepper and gladiolus are grown in his farm.

Since the beginning he has never used chemical fertilisers for his farm. He says, his main aim is to grow plants naturally without putting pressure on the soil. E.M. techniques & E.M. Bokashi are extensively used for natural growth and good yields. Cow dung is purchased and used to enrich the soil. He has released earthworms into the farm to enhance soil fertility and porosity. Neem cake and neem oil are used to protect the farm from pests. However, monkeys, rodents, red ants and insects need to be dealt with.

A well on his farm meets the water needs, and is supplemented in summers with water stored in a huge synthetic tank, mainly for vanilla and pepper. Income comes from the sale of cashew, mangoes, coconuts and black pepper which he sells to the 'society' at the market.

Since it is relatively a young farm, the economics are at break-even. He is presently working on enhancing farm productivity.

He plans to farm only organically as there is a good demand for organic produce which is safe for consumption, high in nutritive value and good to taste.

(Source:Afonso Travasso)

MOHAN M. TENDULKAR

Malkpan Malkarnem, Sanguem – 403704, Taluka – Quepem, Goa. Ph.: 0832 2678286, Cell: 09765185353

Mohan Tendulkar has been practising organic farming on his 18 acre farm for the past quarter century. He lives on the farm itself with his family and the entire farmland is tended by him and his wife. The home has been running on gobar gas since 1988, and sprinklers are fitted for irrigation. The water source to the farm is from an open well, which runs dry in summer months from March till the onset of monsoons. Coconut, cashew, banana, pepper are the main crops. They cultivate vegetables, corms, tubers, ginger etc. during the months of water availability. These are sold at the local markets. He claims that there is an ever ready market for all his produce and pricing is never a problem. Traders and customers have never questioned his pricing because they are assured of premium quality. He uses vermicompost, vermiwash, cowdung and cow urine on the farm. Excess vermicompost is sold.

Farmers, students and organizations interested in starting vermiculture units are trained at a small training centre on the farm. He is regularly invited by schools and local institutions as a trainer and resource person to set up composting units.

The farm has a milk collection centre. A farm produce processing unit for making papads, pickles, dehydrated vegetables, spice powders, dehydrated fries, fruit pulps etc. is run by a self help group named Suvidha that has been functioning since 1996. Tendulkar has served as president of the farmers club of Malkarnem for eight years and as chairman of Shanta Dairy Society, Malkarnem for two years.

He is very happy to be an organic farmer and the enthusiasm with which he talks about his work is sure proof of his contentment.

(Source: Personal communication with OIP)

HEERA ORGANIC FARM

Dhat, Mollem, Goa,
Res: Khandola, Marcel, Goa 403 107. Ph.: 0832 288266
Contact: Arunrao Vijay Madgavkar

ORGANIC FARMING ASSOCIATION OF INDIA

Central Secretariat,
G-8 St Britto's Apts., Feira Alta,
Mapusa 403507 Goa.
Phone: 91-832-2255913
email: myofai@gmail.com
www.ofai.org

The Organic Farming Association of India (OFAI) is the country's only organization of grassroots organic farmers. Since Indian agriculture continues to remain a source of livelihood for mostly small farmers and peasants, OFAI membership reflects this ground reality as well.

OFAI is also committed to active involvement of women farmers in the decision-making structures of the association. Such involvement is mandatory and reflected in the organisation's bye-laws.

The association- which is registered under the Indian Societies Registration Act – was formed three years ago. Its memorandum of association was written and approved after a wide consultation with organic farmers.

The primary objective of the association is to promote organic farming within the country and to take all such means that are available to achieve this purpose. OFAI's labeling scheme is meant to provide an assurance of guarantee of organically grown produce exclusively for domestic consumers. The organisation has rejected, at the outset, any preoccupation with organic farming for export purposes.

Unlike others organic farm certification systems, OFAI farm certification is done through the agency of trained organic farmers themselves. OFAI does not accept farm inspectors who do not themselves practice organic agriculture.

As OFAI farming is based on natural principles, it is firmly opposed to the introduction of Genetically Modified Organisms (GMOs) in agriculture and will actively campaign against such agriculture.

The ultimate objective of the association is to produce poison-free food for Indian consumers and to achieve this by maintaining the living fertility of Indian soils.

(Source: OFAI, Goa.)

THE GOA FOUNDATION

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Monitors the organic farming scene in Goa. Organises training workshops on organic farming from time to time.. Britto's Apartments, Fiera Alta, Mapusa – 403 507, Goa. Phone: 2263305 / 2256479. Email: oib@sancharnet.in

(Source: OFAI)

Western India

Gujarat

Interview with Sarvadaman Patel

Sarvadaman Patel is one of the pioneers of the organic farming movement in Gujarat. His 40 acres farm in Ravipura, near Anand, in Gujarat, is a pilgrim centre for farmers interested in biodynamic farming. Like many others, Patel too once practised chemical farming. It was only later, when he realised the after effects of chemical farming that he changed to organic farming. His farm yields a good crop which he sells from his own shop. The surplus is sold to an organic shop in Baroda and to other organic farmers who have their own outlets.

Bhaikaka Krushi Kendra, At: Ravipura, Po:Ghuteli, Anand-Sojitra Road, Dist: Anand, Gujarat, Phone: 02692-281664
Cell: 09825045730

Gautam Sarang: First, tell me something about your present way of farming i.e Biodynamic farming.

Sarvadaman Patel: Biodynamic farming is something more than organic farming. It was started by Dr. Rudolf Steiner in 1924, in Germany. It invokes a combination of both cosmic energy and earth forces through various preparations. For example, the horns of (dead) cows are filled with cow dung and buried in the soil for about six months in the wintertime. The material we get from this is full of humus and micro organisms. 25 grams of this material is mixed in 15 liters of water, stirred clockwise and anti clockwise, forming a whorl. This is sprinkled on the soil in the evening. It increases the micro-organisms, biotic activities, earthworm population and improves the structure of the soil. This is done 4 to 6 times in a year. This preparation is called BD 500.

There are seven such preparations named BD 501, 502 etc., each involving different materials. Some of these are ground quartz or silica, certain flowers, herbs etc. Instead of cow dung, the cow horn is filled with one of these materials and buried in the soil for six to twelve months. Some preparations have to be made by burying the material in animal skulls. These preparations are excellent for composting. One gram each from these seven preparations will increase the speed of composting.

GS: How does BD farming actually work?

SP: Plants are classified into leafy crops, root crops, flowers and seed crops. In biodynamic farming there are certain days for planting, sowing and harvesting particular plants using the lunar biodynamic calendar. This is done according to the part of the plants that we use. Such cultivation according to the biodynamic calendar uses lunar energy to influence the plants and introduce vital forces into it. According to Dr. Steiner, food which is produced by using chemicals can fill our stomachs, but not our souls. The food from biodynamic farming is filled with spiritual energy as well. It transmits this vital force to those who eat such food.

Sarvadaman Patel

The BD preparations are basically not substances in themselves. They give certain force to the plants to take the necessary nutrients from the soil. There is a preparation using 60 kilos of cow dung and three grams of each of the BD preparations from 502 to 507. This is used as a supplementary input for the crops. Some preparations are intended to stabilize the nitrogen in the soil. Some are used as pesticides as well (BD 501 and BD 508)

GS: How long have you been practicing biodynamic farming?

SP: We have been practising biodynamic farming since 2002. We arrange for knowledgeable people to talk on this subject regularly. One such person is Mr. Peter Proctor from New Zealand. He comes to India and gives courses on biodynamic farming in different parts of India. We frequently organize courses on our farm in Ravipura too.

GS: Are there any other farms that do biodynamic farming?

SP: There is one good farm run by Dr. Dinesh Patel in Kathwada, near Ahmedabad. He has about 160 acres of organic farm and is practising biodynamic farming since 2003.

GS: Are there any special methods for dairy farm and poultry in BD farming?

SP: Of course there are very specific and strict rules. For example, de-horning (cutting of horns) is not permitted. There are special ways in which to tie the animals, feed them etc. In our farm we do all these things in the BD way except for the feed concentrate that we give the animals. We still give the feed concentrate from Amul dairy because we have not been able to produce necessary ingredients ourselves. However, we hope to produce enough concentrate soon.

GS: Is biodynamic farming easy to learn? Does it involve much preparatory work?

SP: It is easy to learn, but one should be prepared for a lot of work. As I have already mentioned, several factors are at play: the lunar calendar, the BD preparations, all the farming operations to be done as per the schedule etc. All this makes it a little difficult. But you can see the results very quickly. Within days of using some of the preparations, you can see the change. For example when you spray BD 500 on the earth, there will be intense dew formation next morning because it draws the dew from the atmosphere and it gives it to the soil. Think of the consequences if this is used in dry lands where rain is scarce or there is a dry spell for more than 20 days. If it is sprayed on the field in the evening, this will keep the soil moist and the plants living. There is a good possibility that we can save some of our crops. The preparation can also be used in the winter so that we can save some irrigation. So these preparations have a significant role in water usage management, regenerating soil and cultivation in dry land farming.

GS: Coming now to organic farming, do you think it is possible to eliminate the use of chemicals totally from the cultivation process for all crops?

SP: Yes, we have been doing this since 2000. We use organic manures instead of NPK. We supplement the nitrogen in the soil with neem or groundnut cake, rock phosphate for phosphorus, ash or seaweed for potash. We have been able to maintain our yields for most of the crops.

GS: Do you have a farming background?

SP: As a matter of fact I do come from a farming background. I have a basic B.Sc degree. As a final year student we had to take a one year practical farming course. A five acres farm was managed jointly by eight boys and we had to cultivate paddy, maize, soybean and wheat. It was meant to provide students with experience. But I really think that being a Patel, we are hereditary farmers. For one or two generations, we may not have farmed. But it has all come back to me. After receiving my master's degree from University of Wisconsin, Madison, I worked for one and an half year at three different dairy farms in the USA before returning to India.

GS: What do you grow on your farm?

SP: We have allocated six acres for growing vegetables where we grow almost all the vegetables that grow in our region. We have fruit trees like papaya, banana, guava, mango, pomegranate, chickoo, amla, mosambi, lemon and many other small fruits. We have pulses as well. So basically, what we have is a certain amount of everything. We are doing this so that our shop can cater to the different food requirements of the people throughout the year. At the same time, we do not produce so much that we have to go to someone else to sell the produce. After all, vegetables and fruits are perishable commodities and there have been times when we could not sell all of it. With experience I know how much my shop can sell. Only as the last resort will I go to the general market to sell the surplus. There too, as I have a name as an organic farmer I get 10-15 percent better price for my produce.

GS: Nowadays there is a great emphasis on foreign markets and export of organic products. Is this a good thing? Will it benefit the average organic farmer?

SP: Actually, not many farmers are going for certification because of the paperwork involved. In Gujarat we have developed our own certification system involving farmers as appraisers. My views on this are: if we can sell our produce for the same or a better price in India, why export it? On the other hand if I get more money from selling the produce abroad, it can be used for spreading of organic farming movement in India or research. So, I am not against export as such, but I think we have good organic market in big cities itself.

GS: Are there adequate markets for organic produce? After all, unless there are adequate buyers for the produce, farmers may not have the incentive to go organic.

SP: I have created my own market. I have a shop on my farm. I am also selling my produce to Vasundhara (earlier run as Ameedhara by Jatan) and to some people here and there in Ahmedabad. That's the situation at present. We are not yet organized. However, farmers are converting to organic farming not because they will get a good price for the produce but because they are not getting a good crop any more from chemical farming. They have realised this fact.

GS: Applying a cost benefit ratio to organic v/s chemical farming, is organic farming beneficial from the point of view of cash returns?

SP: Definitely yes. It took about two to three years to get to that level. Initially there were some problems of pests and so on. Later, as fertility of the soil improved it increased resistance in plants and so the pest attacks became fewer. So, costs have come down now, as there are no pesticides or fertilisers being used. Compost making is one of the major costs we incur now. Cultivation has also become very easy because the soil is always workable, water requirements are very less, and so is labour. We have reduced irrigation by about 30-40 percent. Less irrigation means fewer weeds in the fields. Less weeds means less work for the labourers. So there is definitely a very good cost-benefit ratio.

GS: Could you tell us about some of the improvements that have taken place on your farm because of organic farming.

SP: Take the case of our fodder crop lucern (alfalfa). Earlier, we used to irrigate the field once every seven days, in summer. Now we are irrigating the crop once every 14-15 days. Earlier the crop stood at two to two and a half feet height only. Today it grows up to three and some times four feet in winter. In winter we used to irrigate once in twelve days, but now once in 20-25 days. So we are saving 30%-40% on irrigation for just one crop. As for the other crops like lady's finger, cow pea and cluster beans, the first irrigation is done only one month after sowing. And the subsequent irrigation comes after ten or twelve days. Earlier we used to irrigate about twenty days after sowing and subsequently every seven days. So here again, we save on irrigation. So one significant change is water conservation and that means saving of electricity, wear and tear of the motor, labour, everything! Earlier we faced water shortage in the summer season. Gujarat Electricity Board gives electricity for irrigation purpose for only eight hours daily. But we don't complain anymore.

Another aspect is that disease and pests have reduced tremendously. Mosaic has practically disappeared. It comes and goes. Aphids, which were a problem on our farm for one and a half years, we don't see at all. Fruit flies have reduced, though they have not gone away completely. And caterpillars in cauliflower and cabbage cause a negligible one to half percent damage only. Tomato is also having no problem. Chili is the one crop where we have not been successful and our harvest has reduced.

GS: Did your yields drop when you changed to organic?

SP: No. To my surprise, the yields didn't drop for most of the crops. Possibly the residual effect of the chemicals we used for the past 23 years were still playing a role in the first season. I felt the drop in the second year, not the first.

GS. That's very interesting. Other farmers tell a different story.

SP: I always had around 70 animals. I used to use cow dung and good compost along with the pesticides and chemicals. So, actually there was nothing like a big change when I stopped using chemicals. My pesticide use was also minimal as compared with the other farmers. I had a good earth worm population even when I was using chemicals, which of course have multiplied a hundred fold now.

GS: What is the effect of the chemicals used by the neighbouring farmers on your farm and how do you protect your farm from contamination through air, water or soil?

SP: We have been very lucky that around our 40 acres farm, on three sides there is a village road and on the lower side there is a slope and our water goes to the other land. On that side we have three thick lines of glyricidia and one line of trees. So we have very good buffer zone. Even from the village road, water doesn't come to our land, but it goes into the drainage. So there is no way that any pesticide or chemicals can come to our land. Also in our area the use of pesticides is negligible. Farmers use urea and sulphates but no pesticides.

GS: Do neighbouring chemical farmers come to visit your farm? How do they feel?

SP: Very few of the neighbouring farms bother about me. But because of Jatan and other people in Gujarat who know about my farm, at least 4-5 farmers come weekly to see the farm. On the last Saturday of every alternating month we have groups of 40-50 people visiting. I spend a few hours with them. I show them the farm and the different practices that we follow.

GS: What is the future you foresee for Organic Farming in Gujarat?

SP: The mood is definitely changing. We now see more people starting to do vermicomposting. Many chemical farmers who visit our farm want to change because yield has gone down in chemical farming, but they are reluctant to keep cows and other animals to meet their compost requirements. They feel a lot of work is involved in doing organic farming that is why the change to organic is slow.

GS: Are you happy that you have given up chemicals?

SP: Oh yes I am very, very happy to be using organic methods. So many diseases have disappeared; deficiencies of zinc and phosphorus in the soil have reduced. Now I don't even have to depend upon experts for making the preparations for cultivation. Some times I think out preparations to use against the pests on my own or I let nature balance the pests in her own way. Now, I am only a watcher. Watching nature, seeing what is controlling what. There is definitely a tremendous change in my attitude towards farming. I am mentally very satisfied after changing to organic and I have learnt more about agriculture in the last eight years than I did after receiving my bachelor's and master's degree.

Organic Farms

BHASKER SAVE'S KALPAVRUKSHA FARM

Po : Deheri, Taluka : Umbergaon, District : Valsad – 396 170, Gujarat. Phone No. 0260-2562126

'Su-Swagatam', proclaims a bright blue plaque with white lettering at the gate of Bhaskar Save's verdant 14 acre farm, Kalpavruksha.

About twenty steps from the gate is another sign that says: 'Co-operation is the fundamental law of Nature'. Further inside are numerous other sign-boards that attract attention with brief, thought-provoking 'sutras' or aphorisms. These pithy sayings contain all the distilled wisdom on nature, farming, health, culture and spirituality that Bhaskar bhai has gathered over the years, apart from his extraordinary harvest of food.

If you ask this warm humble farmer where he learnt his way of natural farming, he might tell you, 'My university is my farm.' And now, his farm has become a sacred university for many, as every Saturday afternoon brings a few dozen or more visitors. Included in the entourage are farmers, agricultural scientists, students, city folk, government officials, VIPs and the occasional foreigner who has read or heard of Bhaskar Save's work.

Kalpavruksha compels attention. For, its high yield easily out-performs any modern farm using chemicals. This is readily visible. The number and quality of the coconuts per tree are among the highest in the country. Some of the palms yield over 500 coconuts each year, while the average is about 400. The crop of chikoo (sapota) is similarly abundant and of excellent flavour providing on average 300-350 kg premium quality fruit per tree each year. Much of the orchard–planted over thirty years ago – is under these two species.

Growing here and there in smaller numbers are banana, papaya, and a few trees of date palm, drumstick, areca nut, mango, jack, toddy palm, bamboo, custard apple, jambul, guava, kala jamun, pomegranate, lime, mahua, tamarind, neem, audumber and several others, apart from various under-storey shrubs and vines.

Native rice, pulses, wheat and some vegetables too are grown in seasonal rotation on about two acres of land. These provide enough for this self-sustained farmer's immediate family consisting of six adults and three grandchildren. Acreage of rice-indigenous variety called Nawabi Kolam – is cultivated, this may be gifted to relatives or friends, who appreciate its superior flavour and health benefits.

Bhasker Save, one of India's organic farming legends, still going strong at 89.

The income of the farm however, comes mainly from the sale of chikoo fruit and coconut saplings, while the sale of banana, papaya, ripened coconut, curry leaves, and some fuel wood fetches most of the supplementary cash earnings. Expenses are minimal, and the net profit reaped is over rupees six lakhs per annum! And this, without succumbing to the temptation of much higher export prices offered by several western buyers of organic food.

The diverse plants on Bhaskar Save's farm co-exist as a mixed community of dense vegetation. One rarely sees even a small patch of bare soil exposed directly to the sun, wind or rain. While the deeply shaded areas under large trees have spongy carpet of leaf litter covering the soil, a variety of weeds spring up wherever some sunlight penetrates through the vegetation.

The thick ground cover is an excellent moderator of the soil's micro-climate, which Bhaskar bhai believes to be of utmost importance in agriculture. 'On a hot summer day, the shade from the plants or the mulch (leaf litter) keeps the surface of the soil cool and slightly damp. During cold winter nights the ground cover is like a blanket conserving the warmth gained during the day. Humidity too is higher in the under-canopy of dense vegetation, and evaporation losses are greatly reduced. Consequently, irrigation needs are very low. Moreover, the little insect friends of the soil thrive under these conditions.'

Nature's Tillers and Fertility Agents

It is not without reason that Charles Darwin declared a century ago, 'it may be doubted whether there are many other animals that have played so important a part in world history as have the earthworms.'

Bhaskar Save confirms, 'A farmer who aids the natural regeneration of the earthworms on his farm, is firmly on the road to prosperity.'

'A dark, moist, aerated surrounding with an abundance of organic matter, and protected from extremes of heat and cold, is an ideal environment for the earthworm to flourish. It digests organic matter like leaf litter along with the soil, while churning out in every cycle of 24 hours 1 and a half times its weight of rich compost, high in all plant nutrients.'

Vermicompost is 'black gold'. In relation to the surrounding parent soil, the intricately sculpted worm castings may contain twice as much magnesium, five times as much nitrogen, seven times as much phosphorus, and eleven times as much potash.

Save estimates that at least 6 tonnes of such nutrient-rich castings are added to the soil by the earthworms each year in every acre of his land. That is more fertiliser than most farmers can afford to dig in!

Various other soil-dwelling ants and termites similarly aid in the physical conditioning of the soil and in the recycling of nutrients. And there are innumerable such helpful creatures in every square metre of a natural farm.

Bhaskar Save, however, does not claim to have any special method for making the armies of insects toil for him. 'This is Nature's way', he says. "The most important step is to let it happen by not adopting short-sighted technological interventions, such as the use of chemical fertiliser or pesticide, excessive tillage or intensive irrigation.'

'Modern agricultural practices have proved disastrous to the organic life of the soil. Many of the burrowing creatures are directly killed by the toxic effect of the chemicals used. The consequent soil compaction has reduced soil aeration and the earth's capacity to absorb moisture. This is further aggravated by soil-surface salinisation caused by too much irrigation and poor drainage. By thus ruining the natural fertility of the soil, we actually create artificial "needs" for more and more external inputs and unnecessary labour for ourselves, while the results are inferior and more expensive in every way.'

Other wild friends, such as weeds

'In nature, the humblest of creatures and plants play a significant role in moderating the eco-system. Each is an inseparable part of the food chain. The excrement of one species is nutrition for another. And in death too, every organism or withered leaf leaves behind its contribution of fertility for the birth of new life.'

Consequently, pleads Bhaskar Save, 'if we truly seek to regain ecological harmony and sustainability, the very first principle we must learn to follow is, "Live and let live."

'...Since all plants are provided by Nature in her wisdom to fulfill certain functions in relation to the soil and the creatures of the soil, we must think most carefully before removing what we consider undesirable weeds. In particular, violent methods like spraying chemical weedicides and the use of heavy tractors should be totally given up.'

At Kalpavruksha, no labour is lost even in manually rooting out weeds, though sometimes wild creepers that are overshading young saplings may be cut and mulched.

The manual uprooting of weeds disturbs the organic life of the soil less than mechanical tillage, but is still usually undesirable. On the other hand, the cutting of weed growth above the land surface – without disturbing the roots – and laying it on the earth as 'mulch', benefits the soil in numerous ways.

With mulching, there is less erosion of soil by wind or rain; less compaction, more aeration; more moisture absorption; more insulation from heat and cold; less evaporation, less need for irrigation; and more food for the earthworms and micro-organisms to provide nutrient-rich compost for the crops. Moreover, since the roots of the weeds are left in the earth, these continue to bind the soil, and aid its organic life in a similar manner as the mulch on the surface.

Most of the 'nutrients' of weeds are derived from elements present in the air and moisture. The minerals drawn from the soil constitute barely 5 per cent of their total weight. The problem of competition for these does not arise, for nature is never so foolish as to select such weed species, whose mineral needs are less than plentifully catered to in the soil where they are chosen to grow. And since weeds are shorter, have comparatively shallow roots and brief life spans, they do not hinder the taller, deeper-rooted, long-life trees in any way at all.

Some of the so-called weeds found in Kalpavruksha, like the 'koucha', 'dhaincha' (or 'ikkad') are leguminous. Along with other leguminous shrubs and trees, these are the fertiliser factories of nature. In their root nodules dwell billions of specialised rhizobium bacteria that 'fix' atmospheric nitrogen in the soil.

Multi-storey, multi-function

Above the ground cover of weeds that constitute the lowest storey of vegetation in the orchard area of Kalpavruksha, there are numerous shrubs like the 'kadipatta' (or curry leaves/ sweet neem) and the homely crotons that line the pathways through the orchard. The latter plant, of various spotted and striped varieties, serves Bhaskar bhai as a 'water metre', indicating by the drooping of its leaves that the moisture level of the soil is falling.

The shrubs of curry leaves (sweet neem) – milder than their relative, the bitter neem – contribute to moderating the population of several species of crop-feeding insects, while also providing an important edible herb widely used in Indian cooking. From this minor crop alone, Bhaskar Save earns an income of at least Rs.2000 each month, at zero cost since the purchaser provides the labour for harvest.

Honey is another 'minor produce' of the farm, highly valued for its medicinal properties. The bees provide many kilograms of it each year, without any demand on labour or input of any kind. These little, busy creatures also take care of most of the pollination needs on the farm.

Here and there, one may see climbers like the pepper vine or betel leaf in a spiral garland around a supari (arecanut) palm, or perhaps a passion fruit vine arching across a clearing. These provide additional bonus yield on the side.

Excluding the two acres under coconut nursery, and another two acres of paddy field, the average food yield from the orchard is about 15,000 to 20,000 kg. per acre per annum. And in terms of nutritional value, this is many times superior to an equivalent weight of food grown with the intensive use of toxic chemicals, as in Punjab, Haryana and many other parts of India.

'In 1960,' writes Save, 'I realised that there is no substitute for organic farming. In this form of farming I give back something to Nature and enjoy Nature in its original form.

'From my personal experience and experiments I would like to stress that without earthworms we cannot get or achieve good and healthy production from the land.

'Even though I have proved this to my friends and village collegues, they refused to acknowledge or believe me. They went to the extent of calling me a "Mad Man."

'However, Mr. Ashok Sanghavi, who was my student when I was working as a teacher, has introduced on the waste land of his family farm, "Sanghavi Farm", my system of farming with great success. This has evoked a change in the attitude of my old friends and local colleagues who have also started to change and shift to my system of farming and find what I say is very true.

'I will be failing in my duty if I don't thank Ashok Sanghavi's for his efforts in popularising my method of farming. Due to his efforts I have won many awards and citations for my method of farming.'

He concludes by saying,'Farming is not a business, but religious work. An infant has the right to his Mother's milk, not her blood. With the use of chemical fertilisers and pesticides we are sucking blood along with milk from the Motherland. Therefore, our Motherland is sinking and production has decreased.'

Appreciations:

(1) The world-famous farmer, Masanobu Fukuoka (Japan), while visiting our farm said , 'Mr. Save is a second Gandhi for India. I have not observed similar work in the whole world. My heartiest wishes are that people should get guidance and inspiration from his work.'

(2) 'People of the Year Award' by the Limca Book of Records as farmers who generate high yield and profits.

(3) Planning Commission (Delhi) has given an entry to organic farming in the Ninth Five Year Plan.

(4) 'Paradise on Earth' is the title given by visitors and the media to the farm.

(5) 'Nisarga Bhooshan' by Nisarga Pratishthan, Sangli, 1993.

(6) The Bajaj Award in Science and Technology for Rural Development in the year 2000.

(7) The Gujarat Government's farming award for the year 2002 for organic farming.

For more details, Mr. Ashok Sanghavi has written a book on 'Organic and Natural Farming with Mr. Save System' based on his, as well as Mr. Save's experiences. The English, Hindi, Marathi and Gujarati book comprises of 55 chapters which contain the answers to all your queries.

Bhasker Save's farm is open to visitors every Saturday.

(Source: Bharat Mansata)

SANGHAVI FARMS

Farm: Sanghavi Farm, Sundarvan, Umargam, Dist: Valsad -396 171, Gujarat,Phone: 0260-2563277

Office: 23-A, Central Chowpatty building, Chowpatty, Mumbai – 400 007, Maharashtra.

In 1987, the place was a wasteland. Hence, right from the start, a variety of experiments were carried out to maximize use of water, space and sunlight in order to farm the land.

One of the experiments was spacing the trees. Normally coconut trees are planted 25 feet apart so that four trees occupy

625 square feet of land, or there are 70 trees to an acre. On this farm, two coconut trees are planted leaving 50 feet on one side and 25 feet on the other, so that the trees get sunlight as well as this method can accommodate 84 instead of 70 trees per acre. In the vacant space on either side, medium and short life trees and plants are grown, thereby adding to quality, quantity and variety of produce.

After the success of this experiment, another experiment called Surya Mandal was tried in which 12 coconut trees are planted in a circle. The purpose is to show that they can flourish with the use of only 15 to 20 litres of water per day. The distance between two Surya-mandals should be more than 100 feet to provide ample growth opportunities to the trees.

Similar experiments have been conducted on different plants. The results are impressive. Sapota trees which normally yield after seven years have yielded within a year and a half. Sugarcane is planted in such a way that it produces for a life time with very little water. Even alphonso mango gives impressive results.

Sanghavi Farm disseminates its knowledge widely hoping thereby to prevent farmers from financial ruin and misery. Ashok Sanghavi's book 'The Way of Health, Life & Wealth' attempts to address the farmers and the general public on organic farming systems and why it is best to live in harmony with nature.

(Source: Communication with OIP)

YAGNESH DESAI

Treasurer, Nisarg Seva, Mohan Opticians, Azad Chowk,
Valsad – 396 001, Gujarat.Cell: 09825125074

An optician with a naturopathy background, Desai has a mango orchard with 250 trees and also grows vegetables for home consumption. He uses earthworms and bio-pesticides and has nitrogen fixing trees to improve soil fertility. He has also started honeybee production.

Nisarg Seva was started to educate people about organic products. The organisation also markets products like unpolished rice, chemical free jaggery, unrefined sugar, vegetables etc. It has initiated a programme to provide training in vermiculture to farmers.

(Source: Communication with CSE, 1993)

RAMANBHAI KALIDAS DESAI

At Gorwada, P.O. Ghadoi, Taluka & District Valsad - 396 001, Gujarat. Ph.: 02632 329905, 02631 299583.

Desai started organic farming in 1996. His 3 acres farm is 90% organic. He grows mangoes. (Source of information: J=Jatan)

DR. ASHOK CHAMPAKLAL SHAH

3-Amar Apartment, Opp. Swarg Ashram, Tithal Road, Taluka & District Valsad - 396 001, Gujarat. Ph.: 02632 254070 (R), 237029, Cell: 09825123874, Email: dracshah13@yahoo.com.

Dr Ashok Shah with farmers in a cotton field

Shah started organic farming in 1994. His 2.5 acre farm is 100% organic. He grows mango, chickoo, orange, lemon, fruits, vegetables, herbs and flowers. (J)

MANOJBHAI NATWARBHAI NAYAK

At Vashiyar, Near Gram Panchayat Office, Taluka & District Valsad - 396 001, Gujarat. Ph.: 02632 251407 (R), 245576 (O), Cell: 09825670371.

Nayak started organic farming in 2001. His 7 acre farm is 100% organic. He grows mango. (J)

RAMANBHAI GULABBHAI NAYAK

A/5, Parijat Co. 1st Floor, Bh Swargashram Mandir, Tithal Road, Taluka & District Valsad - 396 001, Gujarat. (J)

BIPINCHANDRA LILACHANDRA SHAH

Bobby Farm, Dharampur Road, At Jujwa Pathri, P.O. Jujwa Pathri, Taluka & District Valsad - 396 007, Gujarat. Ph.: 02632 241815, Cell: 09979464979.

Shah started organic farming in 1990. His 16 acre farm is 100% organic. He grows paddy, green gram, mango, chickoo and vegetables. (J)

RAMUBHAI GOVANBHAI PATEL

At Ronvel, P.O. Ronvel, Taluka & District Valsad - 396 055, Gujarat. Ph.: 02632 266123.

Patel started organic farming in 2001. His 3 acre farm is 100% organic. He grows paddy, wheat, horse gram, mango and chickoo. (J)

LALLUBHAI B. PATEL

High School Faliya, At Ronvel, P.O. Ronvel, Taluka & District Valsad - 396 055, Gujarat. Ph.: 02632 267269, Cell: 09428160390.

Patel started organic farming in 2001. His 14 acre farm is 100% organic. He grows paddy, wheat, mango, chickoo and fodder. (J)

NANDIGRAM

Dharampur Road, Po : Vankal, District : Valsad – 396 007, Gujarat. Phone: 02632-267245, 267594

(Contact: Ms Kundnika Kapadia, Managing Trustee)

Nandigram grows rice, vegetables, wheat, groundnut, chikoo, mango etc. They use seaweed, pyramid water, herbal insecticides made from sitafal and tobacco leaves.

DHIRENDRA AND SMITA SONEJI

Village Sakawa, P.O. Samariya, Taluka: Rajpipla, Dist. Narmada, Gujarat. Phone: 02640-291173

Three decades ago, Dhirendra and Smita left their jobs as lecturers in an educational institute - the Government Polytechnic for Girls - and settled down in Sakawa, a village near the Satpura range in the tribal area of Bharuch in May 1986. They have been doing organic farming since.

VIRJIBHAI–SUSHILABEN VIRADIA

Saptada, Via Gora Colony, P.O. Indravarna, Taluka Rajpipla - 393 155, District Narmada, Gujarat. Ph.: 02640 291172, Cell: 09879537377, 09427873065.

Virjibhai and Sushilaben are organic farmers. Their 10 acre farm is 100% organic. They grow wheat, paddy, maize, sorghum, horse gram, green gram, mango, guava, sugarcane, vegetables and turmeric. They also produce chemical free jaggery & turmeric powder. (J)

JIGNESH BABUBHAI PATEL

At Nawa Rajuwadia, P.O. Nawa Rajuwadia, Taluka Rajpipla - 393 141, District Narmada, Gujarat. Ph.: 02640 249675, Cell: 09913048104.

Patel started organic farming in 2005. He has a 7 acre farm 30% of which is organic. He grows sugarcane. (J)

SATISHBHAI RAVJIBHAI PATEL

At Nawa Rajuwadia, P.O. Nawa Rajuwadia, Taluka Rajpipla - 393 141, District Narmada, Gujarat. Ph.: 02640 249677, Cell: 09825930112.

Patel started organic farming in 2003. His 50 acre farm is 100% organic. He grows wheat, banana and sugar cane. (J)

KANUGIRI NAGINGIRI GOSWAMI

At Nawa Rajuwadia, P.O. Nawa Rajuwadia, Taluka Rajpipla - 393 141, District Narmada, Gujarat. Cell: 09723828310.

Goswami started organic farming in 2003. His 10 acre farm is 100% organic. He grows sugar cane. (J)

JYOTSNABEN PATEL

Ishvarshyam Ashok Vitika, At & P.O. Gora, Taluka Rajpipla - 393 115, District Narmada, Gujarat. Ph.: 02640 291235, 291289, Cell: 09428721587.

Jyotsnaben is an organic farmer. Her 5.5 acre farm is 100% organic. She grows sorghum, pearl millet, maize, green gram, pigeon pea, black gram, groundnut, mango and fodder. (J)

BADRISHANKAR MOTIRAM JOSHI

At & Post : Tannachha, Taluka : Aamod, Distrist : Bharuch - 392025, Gujarat.

Phone: 02641-238426 (R), 238460 (O), M : 09427158275

Badrishankar's farm is 37 acres. He belongs to a farming family and has been farming for the past 50 years. He follows a mixed crop system and grows cotton, lentils, green gram, soyabean, mustard, wheat, lady finger etc.

Badrishankar says that he has been practising organic farming for the last 13 years. He faced no difficulty while switching to organic farming and did not notice any reduction in the yield. He uses traditional seeds and techniques like mulching, cow dung fertiliser, castor seeds and groundnut waste, green vegetable waste, cattle waste and vermi-compost. He has some cattle - bullocks and cows.

Badrishankar sprinkles a concoction of margo, vasaca, dhatura, madar mixed with the urine of cattle to protect the farm from pests. He sells the produce in the market but is not satisfied with the returns.

His neighbours do not practice organic farming but are beginning to show interest.

Badrishankar says he explains to his farmer neighbours that when he was adding chemicals to his farm the productivity of the land was reducing and the farm land was turning hard. The expenses on the farm increased. But now his land has become productive, expenses have reduced and the produce is chemical free. The land now seems pleased and this makes him happy.

Badribhai was one of the first farmers in the region to take to chemical farming. Several years later the same man also came to be a pioneer in sustainable agriculture, having switched to organic farming in 1990. Badribhai's farm of three acres is adjacent to the village settlement. The soil is deep black cotton with a pH condition of around 8. The rainfall is from mid-June to middle/end of September during which they receive around 630 mm of rain. He has two bullocks for transport and farm work. His wife and himself, along with two hired help manage the farm.

The crop area is divided in two sections: the tilled area and non-tilled area. He practices agroforestry in both areas. In the non-tilled area there are jujube, pomegranate, jamun, sapota and other fruit trees. Between trees he plants cotton, castor bean and pulses like cow pea and pigeon pea. In the tilled area there are mostly jujube and some guava trees with the intercropping of cotton. Badribhai does not use any heavy machinery. He uses traditional instruments for ploughing, tilling, sowing and various operations on the farm.

As to why he changed over, he says: 'One was to maintain the fertility of soil, and two, to produce food which does not have poison.' He has realised that conventional farming has many draw backs including loss of soil fertility, depletion of ground water, reduction in living soil organisms and an ever increasing consumption of chemical fertilisers and pesticides.

In order to create an environment for natural predators, Badribhai has grown a live-fence around his field, and secondly, in one corner of his land he has a small water tank and a small plot covered with different weeds to enable insects and other small creatures – natural predators – to multiply on their own. He uses biocontrollers like buttermilk, ash, cow urine and neem water as pesticides. But for the most effective control of pests, he says it is essential to develop strong and healthy plants which thrive in a living soil. If the plants are mixed and/or intercropped, the spread of the pests is extensively controlled. Some fruit tree's saplings in his farm sprout by themselves. He does not remove them, because they are bound to become very strong trees since they have come up on their own.

He controls weeds by cutting with a sickle only. The weed cuttings are spread on uncovered soil between the rows of crops as mulch. In this way the soil remains perennially covered by weed cuttings and other green foliage. This practice not only restricts the growth of weeds but also protects the soil against the vagaries of the weather. For manure he applies compost. When he started with his experiment in sustainable agriculture, the soil was hard and saline no micro-organisms were to be seen. The pH ratio is now much improved; the salinity is reduced and the soil has become porous.

About 600 metres away from the farm, rain water is collected in a well, which otherwise has saline water. The addition of rain water makes the well water less saline and suitable for farming. This enables him to irrigate his farm for a period of two months after the end of the rains. Thanks to mulching, the evaporation losses are substantially reduced and water requirements are cut down.

Badribhai is also involved with the local farmer's union. He runs a voluntary organisation named Shantigram Nirman Mandal in his village. This is one of the first organisations to promote organic farming as early as 1985 along with Manaviya Technology Forum.

(Sources: Prakruti, Mumbai, AME and Jatan)

KAUSHIK KUMAR BHIKHABHAI PATEL

At Bori, P.O. Nabipur, Taluka Bharuch - 392 210, District Bharuch, Gujarat. Ph.: 02642 283814, Cell: 09979419814.

Patel is an organic farmer. Of his half-acre plot, 50% is farmed organically. He grows paddy. (J)

GEMALSINH MOHANSINH RANA

'Prerna Piyush', 'Manusmruti Charitable Trust', Near Primary School, At Valia, P.O. & Taluka Valia - 393 135, District Bharuch, Gujarat. Ph.: 02643 270048 (R), 270191 (O), Cell: 09427873279.

Rana is an organic farmer. His 10 acre farm is 100% organic. He grows sorghum, pigeon pea, green gram, gram, soyabean, mango and vegetables.

KANTILAL P. KALOLA

At Katindra, P.O. Pipdhara, Taluka Jaghadia - 393 115, District Bharuch, Gujarat. Ph.: 02645 247025.

Kalola started organic farming in 1996. His 1.75 acre farm is 100% organic. He grows paddy, wheat, sorghum, pigeon pea, green gram, methi, vegetable, cotton and sugarcane. (J)

MOZDA COLLECTIVE

At Juna Mozda, Taluka Dediapada, District Bharuch, Gujarat. Ph.: 02649 290249.

Contact: (Swati-Michael-Ishwar)

A number of tribals are associated with the Mozda Collective. They grow minor millets, pigeon pea, vegetables and tur dal. (J)

SHANTIGRAM NIRMAN MANDAL

At & Post : Tanchha, Taluka : Amod, District : Bharuch – 392 025, Gujarat. Phone: 02641-238460

Shantigram Nirman Mandal is an NGO which, along with Manviya Technology Forum, promote appropriate technologies in 18 villages of Amod Taluka through various means including Gandhi Mela in early days. Invigorating lectures are held during these melas. One such mela was based on the theme of organic farming, as a result of which several farmers volunteered land for on-field demonstration on different organic farming techniques such as Fukuoka's mulching method, Mazibuko's deep trench method, Save's platform and trench method, permacultue method and Shirin Gadhia's FARM method.

(Source: Communication with OIP)

MAHENDRA BHATT

Sarvangin Gram Vikas Mandal, At : Mangrol, Via : Rajpipla, District : Bharuch – 393 150, Gujarat. Phone:02640-250269

Shri. Mahendra Bhatt pioneered the organic movement in Gujarat in 1985 and coined the word 'Sajiv Kheti.'

(Source: Kapil Shah)

MINESH PARSOTAMDAS PATEL

Patel street, At Post: Shekhadi, Taluka : Petlad, District : Anand – 388 450, Gujarat. Cell: 9998117010

Minesh Patel's 6 acre farm is located in Shekhadi. He grows coconut, ambala, chikoo, wheat, rice, bajra and moong on the farm. He also keeps cattle. He comes from a farming family and earlier practiced chemical farming. He changed to organic farming on the advice of Jatan Trust. Today the farm is completely converted to organic.

He uses vermicompost, panchgavya, amrut pani on the farm as manure and neem oil, cow urine, butter milk, etc., to control pests.

After retaining for family use, the surplus produce is sold in the local market. It fetches a good price. When he changed to organic farming initially the output was reduced and it took time to return to normal output. Thereafter there was a steady increase. He also finds that organic farming requires less water, gives good quality output and more production, and the costs are less.

(Source: Communication with OIP)

SARVADAMBHAI CHIMANBHAI PATEL

Bhaikaka Krushi Kendra, Ravipura, Anand-Sojitra Road, P.O. Ghuteli, Taluka Petlad - 388 440, District Anand, Gujarat. Ph.: 02692 281664, Cell: 09825045730.

Patel started organic farming in 1999. His 40 acre farm is 100% organic. He grows wheat, paddy, pearl millet, green gram, black gram, mustard, sesame, amla, lemon, orange and vegetables. He keeps a well maintained Gaushala. (J)

DEVANBHAI KANUBHAI VYAS

Shiv, Near Court, Tran Darwaja, Khambhat, Taluka Khambhat - 398 620, District Anand, Gujarat. Cell: 09426404195, Ph.: 02698 222640 (R), 285741(O), E-mail: devanbhai@hotmail.com.

Vyas is an organic farmer. 80% of his 15 acre farm is organic. He grows mustard and vegetables. (J)

DEVESHBHAI RAMESHBHAI PATEL

Subhash Chowk, At Boriavi, P.O. Boriavi, Taluka & District Anand - 387 310, Gujarat. Cell: 09426061878, 09824506878, Email: devboriavi@yahoo.co.uk.

Patel started organic farming in 1999. His 9 acre farm is fully organic. He grows soybean, vegetables, ginger, potato and turmeric. (J)

VINUBHAI RAMANBHAI PATEL

Subhash Chowk, At Boriavi, P.O. Boriavi, Taluka & District Anand - 387 310, Gujarat. Cell: 9904727659, Ph.: 02692 271364.

Patel started organic farming in 2001. He has a 5 acre farm. He grows pearl millet, vegetables, ginger, potato and turmeric. (J)

NARESHBHAI SOMABHAI SOLANKI

Subhash Chowk, At Boriavi, P.O. Boriavi, Taluka & District Anand - 387 310, Gujarat. Cell: 09979224410.

Solanki is an organic farmer with a 5 acre farm. He grows green gram, groundnut, vegetables, ginger, potato and turmeric. (J)

VINAYAK CHHOTUBHAI PATEL

At & Po : Budhan, Taluka : Mandvi, District : Surat – 394 140, Gujarat. Phone: 02623 251217, Cell: 09898355803

Vinayak's 31 acres farm is located 3 kilometers away from Baudhan. He belongs to a farming family and has been farming for the past 20 years. He grows banana, papaya, sugarcane, paddy, wheat and mangoes and keeps four cows.

Vinayak is practising organic farming for the last 7 years. Due to use of chemical fertilisers and pesticides his land became so degraded that he stopped chemical farming and started organic farming. His inputs are cow dung, cow urine and waste from sugarcane, papaya and banana leaves. He uses manure made from press mud. After extracting oil from cotton seeds and neem seeds the waste is also used as manure.

દક્ષિણ ગુજરાત સજીવ કૃષિ ખેડૂતમંડળ
અને
ગાંધી વિદ્યાપીઠ, વેડછી. ના સંયુક્ત ઉપક્રમે
સજીવ ખેતી શિબિર

Chhotubhai Patel grows bananas, wheat and mangoes

He produces vermicompost for use on the farm and has started producing 'Panchakavya' and 'Zapapat manure'. Following V. Mohanshankar Deshpande's Rishi Kheti he uses cowdung, honey, amrutpani and mud from under peepal trees.

He finds it difficult to practice organic farming in many areas of his sugarcane plots due to the number of canals and finds it difficult to control pests in paddy fields.

The sugarcane is sold directly to mills, papayas and bananas are sold to traders.

Vinayak says that the difficulties faced by him in organic farming were not many. When he changed to organic farming he felt he was going against the trend and was scared that the income level would drop. However over the years everything has settled satisfactorily.

Some of Vinayak's neighbours have started to explore organic farming as a viable possibility. (J)

MANHARLAL C PATEL

At & P.O. Umbhel, Taluka Kamrej, District Surat – 394 325, Gujarat. Cell: 09909593924

Manharlal C Patel converted to organic farming in 1990 when he realised that poor soil condition was responsible for poor setting of seed in groundnut although the vegetative growth for the same was vigorous.

He has since moved to growing sugarcane, with consistent efforts and organic inputs he has reclaimed soil health using F.Y.M, green manure (dhaincha – Sesbania aculeata), castor cake, neem cake, vermin compost, azotobacter, Phosphate culture and paddy straw mulch.

Sugarcane yield stands at a record 105 tonnes/ hectare. His innovative methods have won him many awards in Gujarat. Many farmers visit his farm for a first hand learning experience.

(Source: Communication with OIP)

GIRINBHAI SUBODCHANDRA SHAH

At Rupan, House no. 149, Near Canal, P.O. Rupan, Taluka Mandvi - 394 641, District Surat, Gujarat. Ph.: 02623 221712 (R), Cell: 09374991388.

Shah started organic farming in 1986. His 5 acre farm is fully organic. He grows paddy, pigeon pea, gram, kidney bean, mango, chickoo, coconut, vegetables, etc. (J)

DINESHBHAI KESHAVLAL PATEL

Gandhi Vidyapith, Vedachhi Taluka Valod - 394 641, District Surat, Gujarat. Ph.: 02625 222038 (O), 220725 (R), Cell: 09427894438.

Patel is an organic farmer. His 2 acre farm is fully organic. He grows sorghum, pearl millet, pigeon pea, green gram and castor. (J)

BIPINBHAI NATHUBHAI PATEL

At Umbhel, P.O. Umbhel, Taluka Kamrej - 394 325, District Surat, Gujarat. Ph.: 02622 271059.

Patel started organic farming in 1992. His 9 acre farm is fully organic. He grows sorghum, paddy, wheat, banana, ginger and sugarcane. (J)

RAJENDRA P. NEMANI

Nemani Farm, At Umara, P.O. Umara,Taluka Mahuva - 394 248, District Surat, Gujarat. Ph.: 02625 252251(R), Cell: 09824134159, 09825487159.

Nemani started organic farming in 2003. His 112 acre farm is fully organic. He grows sugarcane. (J)

MAHESHBHAI AMRUTLAL PAREKH

Jagdish Takies Compound, Khatriwad, At Mandvi, P.O. Mandvi, Taluka Mandvi - 394 160, District Surat, Gujarat. Cell: 09825372557.

Parekh started organic farming in 1996. 75% of his 10 acre farm is organic. He grows wheat, green gram and mango. (J)

DR. BHIKHUBHAI NARSIHBHAI

Gujarat Rajya Sugar Producer Association, At Gangpur, P.O. Gangadhara, Taluka Palasana, District Surat, Gujarat. Ph.: 02622 263274 (O), Cell: 09879411331.

Narsihbhai started organic farming in 1996. 50% of his 10 acre farm is organic. He grows sugarcane. (J)

KUSUMBEN R PATEL

Uttar Buniyadi Vidyalaya, Amalsadi, Taluka Palasana - 394 355, District Surat, Gujarat. Ph.: 02622 224151 (R), 254363 (O).

Patel is an organic farmer. His 10 acre farm is fully organic. He grows sorghum, vegetables and sugarcane. (J)

MINABEN CHAUDHARI

Uttar Buniyadi Vidyalaya, At Vaghecha, Taluka Bardoli - 394 350, District Surat, Gujarat. Ph.: 02622 255960 (O), Cell: 09979334333.

Chaudhari started organic farming in 2001. On his 12 acre farm he grows vegetables and sugarcane. (J)

MAVJIBHAI

Ahsram Shala, At Vaghecha Taluka Bardoli - 394 350, District Surat, Gujarat. Ph.: 02622 255960.

Mavjibhai started organic farming in 2001. He grows pigeon pea, banana and vegetables on his 3 acres. (J)

RAMKUMARSINH

Yantra Vidyalaya, Suruchi Vasahat, At Bardoli, P.O. & Taluka Bardoli, District Surat, Gujarat. Ph.: 02622 220095 (R), 220258 (O), Cell: 09377774764, Email: karegama2003@ yahoo.co.in.

Ramkumarsinh started organic farming in 1988. His 6.5 acre farm is 100% organic. He grows banana, vegetables and tissue plant. (J)

PRAGNESH G. PATEL

Ashram Shala, At Timba, P.O. Timba, Taluka Kamrej - 394 330, District Surat, Gujarat. Ph.: 02621 265015 (R), Cell: 09979460319.

Patel's 9 acre farm is 50% organic. He grows pigeon pea, banana and vegetables. (J)

BABUBHAI L. PATEL

Principal, Uttar Buniyadi Vidyalaya, At Timba, P.O. Timba, Taluka Kamrej - 394 330, District Surat, Gujarat. Ph.: 02621 265014, Cell: 09429092526.

Patel's 15 acre farm is 50% organic. He grows maize, pigeon pea, banana and vegetables. (J)

THAKORBHAI BECHARBHAI PATEL

At Nansad, P.O. Nansad, Taluka Kamrej - 394 185, District Surat, Gujarat. Ph.: 02621 251480, Cell: 09426859774.

Patel started organic farming in 2004. He grows vegetables and sugarcane on his 12 acre farm. (J)

MANOJBHAI SHIRISHCHANDRA SOLANKI

At Kamrej, P.O. Kamrej, Taluka Kamrej - 394 180, District Surat, Gujarat. Ph.: 02621 251080 (R), 251180 (O), Cell: 09426159252, Email:solanki_travel@rediffmail.com.

Solanki is an organic farmer. On his 12 acre farm he grows banana and sugarcane. (J)

TUSHAR RAMANBHAI PATEL

Near Police Station, At Kamrej, P.O. Kamrej, Taluka Kamrej - 394 180, District Surat, Gujarat. Ph.: 02621 251213 (R), Cell: 09377715658.

Patel started organic farming in 2001. He grows banana on his 100% organic 17 acre farm. (J)

RAMCHANDRA GHELABHAI PATEL

At Bhatgam, P.O. Bhatgam, Taluka Olpad - 394 540, District Surat, Gujarat. Ph.: 02621 222274, Cell: 09979946826

Patel started organic farming in 2003. His 3 acre farm is fully organic. He grows litchi and other fruits. (J)

HARIVADANBHAI PARSHOTTAMBHAI PATEL

At Bhatgam, P.O. Bhatgam, Taluka Olpad - 394 540, District Surat, Gujarat. Cell: 09979984603.

Patel started organic farming in 2003. He grows sugarcane on 3 acre farm. (J)

UMA-SURENDRA

Sampurna Kranti Vidyala, Gandhi Vidyapith, At Vedachhi 394 641, District Surat, Gujarat. Ph.: 02625 220074.

Uma & Surendra started organic farming in 1982. Their 2 acre farm is fully organic. They grow paddy, pigeon pea, banana, papaya and vegetables. (J)

GRAM SEVA SAMAJ

At & P.O. Vyara, Dhuliya Road - 394 650, District Surat, Gujarat. Ph.: 02626 220108, Cell: 09428201884.

Gram Seva Samaj's 5 acre farm is completely organic. They grow paddy and vegetables. (J)

GRAM SEWA SAMAJ

Madhyastha Bhandar, Dhulia Road, Vyara, District Surat – 394 650, Gujarat. Ph.: 02626 220108, 220703.

Gram Sewa Samaj is a Gandhian educational centre. They grow organic vegetables and sell it in the town on cycle rickshaw. Other organic produce is also available with them.

NU TECH FARM

Near Rayan village, Mandvi Taluka, Kutch District – 370 465, Gujarat. Telefax: 02834-288911 / 288361, Cell: 09825235811 E-mail: vijaykusum@nugroup.in; nutechfarm@yahoo.com

(Contact: Vijay and Manesh Shah)

Vijay Shah, bearded, with a quick smile, is one of the pioneers of organic farming in Gujarat. The family-owned 42-acre 'NuTech Farm' specialises in fresh dates and Aloe vera. Though he used modern fertilisers and pesticides for seven years, there is a commemorative piece of paper taped to his desk with the penciled note: '1 July 1996: Stopped using chemicals completely.' In the violent desert climate, Vijay Shah has created an oasis of peace – for himself, his extended family, and his land.

After spending five years of his childhood with his grandmother in the small village of Rayan, in southwestern Kutch, Shah spent most of his early years in Mumbai. He graduated from college with a degree in printing technology in 1977 and soon after started a printing business with his brother. Within a few years he began to feel restless. 'I could see that I wasn't a good businessman,' Shah admits. 'Deep in my heart I had the inkling that I must work with the soil, with Mother Nature.'

Looking for a more peaceful existence for him and his father – who had then recently suffered a heart attack – he and his wife moved to 4 acres of ancestral land in Rayan village in 1986. They lived with his father and mother, and began growing crops of sweet corn, melons, pomegranates, figs and dates. Vijay's grandfather used to do rain fed farming, over half a centuary ago, but consecutive draughts forced him to shift to Mumbai.

Vijay Shah started farming with chemical fertilizers and pesticides. Production was exceptional. He says, 'In the days of fertile soil and enough water, we grew beautiful dates and red shining pomegranates. We produced up to six times more than other farms.'

After seven years of synthetic inputs, however, Shah realised what other farmers in the region are now beginning to understand – that chemical farming in their harsh conditions cannot last. Because the chemical fertilizers he used provided nutrients only for the plant, his soil structure was weakened. He realised, chemical fertilisers had killed many of the beneficial organisms that make the soil porous and fertile so it can absorb moisture. The soil lost its finer particles, becoming dead and hardening when it rained. During the dry season, wind blew the cracked, dusty topsoil off his land. When the torrential rains came, they washed loose soil into flash-flood rivers.

To make matters worse, Shah's neighbors began growing cotton. Their reckless pesticide use drove insect pests to seek refuge at NuTech Farm. He was at a crossroads. 'I had to make a decision – whether to continue the vicious cycle of using more and more chemicals, or change my whole way of farming,' he says.

Seeking peace, he changed paths.

At Nu Tech Farm, the main crops are Aloe vera and fresh dates grown using innovative organic methods. Fresh cow dung & urine, plus shredded woody chips of different trees bushes and plants are generously added during initial soil preparation. Bone meal sprinkled with phosphetic culture (to ensure sustained release of P) and seaweed plus green algae sprinkled with sour butter milk solution (to unlock abundant supply of K and micro elements) are added before final soil preparation (raised bed making). As healthy food nourishes healthy people, healthy soil and wholesome feeding produce healthy, strong and vibrant plants.

For consistent and wholesome organic feeding, they intermittently plant selected cultivar of Sesbania rostrata. The nodulation (for nitrogen fixation) in this cultivar is so profuse (partly due to our well maintained drip irrigation), that organic nitrogen is available year round. These sesbanias also provide partial shade in summer when sunlight is too strong and mulch when we cut them down before and after monsoon.

Innovative concoctions of black brown seaweed, green algae, FYM slurry, sour buttermilk solution, Caltropis leaves, neem and castor cakes are fermented filtered and fed through drip. All this adds to complex and wholesome organic nutrition and also provides natural plant protection.

The brown black seaweed (Saragasam wighti) is harvested about one km off the coast of the Gulf of Kutch and brought back to the farm for processing. The harvested crop is dried in the hot sun, then run through a thresher which separates sand and other unwanted stuff and grinds the seaweed into coarse powder grade. The powder is then packed in poly bags (30 kg each) and stored. The powder provides additional nutrients to the dry soil. It can be used as a soak or as a spray. In a year, NuTech uses two tonnes of seaweed for 30 acres irrigated land; an additional 6 tonnes is sold to other farmers.

They allow the cattle to graze (rotationally) in all the aloe plots. Thus weeds remain at manageable height and cows, instead of getting a bland mono diet savour a wide range of natural grasses. Perhaps that makes their milk and even manure, so rich. They keep cows mainly for fresh dung and urine, which is used freely in the in-situ composting. They use lots of seaweed, green algae, neem kernels and also botanicals like castor, caltropis, euphorbia, whole aloe for all round nourishment. Bone meal, bacterial cultures, sour buttermilk, honey, ghee are also used by them.

Other essential factors of judicious agricultural production are termites, earthworms, frogs, lizards, bats, cows, bullocks and wide range of birds (from small sparrows to falcons and kites) who are all farmers' friends and work harmoniously on the farm.

Shah took other steps to protect his soil and shelter plant life. He mulched more and began leaving low-lying weeds around plants as living mulch. He planted more trees to lower soil temperature so it would be more conducive to micro-organic activity. He planted mixed varieties of specialty trees,

Vijay Shah is a good example of the joy of organic farming.and of the total peace and tranquillity that working without causing harm to nature brings. He regularly sends organic produce for distribution at OFAI meetings. May he and his family always prosper!

such as neem, sesbania, drumstick (Moringa oleifera) and five-leaved chaste tree (Vitex Negundo) as wind breaks for his soil.

Fortunately both their main crops aloe & fresh dates are generally free from pest & diseases. To control soft rot in aloe, they use cow urine solution with caltropis & to control red palm weevils in dates they pour hot water with neem & vitex negundo. They also plant trap crops which attract pests (like safflower which attracts lots of aphids, so mustard is not attacked) Their live hedges of adhatoda vasica, vitex, fennel, mix flowers and neem provide natural habitat for predators and parasites, including birds, frogs, lizards and bats.

Shah's new attitude changed the way he looked at termites. He abandoned use of poisonous fumigants to kill pests that attacked trunks of his date trees. Once he stopped trying to kill them, he saw they were benefiting him by breaking down dead matter and providing good aeration to tree roots. 'They don't eat anything green,' he said, admiring their work in the trunk of a date tree. 'Now termites are my best friends.'

Except for the small kitchen garden plot of vegetables, all the produce is sold. Bajra, mungbean and sesame are sold locally (through Kutch sajiv kheti manch – forum of organic farmers of Kutch) while fresh dates are sold through select outlets in Mumbai, Baroda Rajkot and Mandvi. Health drinks are prepared from Aloe vera with selected herbs and are marketed by a sister concern: Nu Ayur Care Mumbai.

Generally five men and six women work on the farm permanently. The work involves, drip irrigation management and periodic overhauling, mulching, shredding, compost preparation, aloe harvesting and juice preparation (year round) fresh date harvesting (June-July), nursery management, tending the cows, etc. Accommodation is basic yet comfortable. All meals are vegetarian, no alcohol and no smoking is allowed. Nu Tech invites visitors to work for short or long stretches on this pollution free, sunny and serene environment.

'I'm not the boss here... maybe the conductor,' says Shah. 'The different players all contribute in their own peculiar way, from friendly bacteria and mycorrhizae to termites, earthworms, bats, frogs, lizards, birds, cattle, dogs and so on. When that kind of harmony develops there is a reverence for each other. Initially, I was always tense, worrying, killing – but now I have peace.'

Why Aloe vera?

Shah gleaned some agricultural wisdom indirectly from African-American educator Booker T. Washington, an idol of his. Washington tells the story of a ship that was caught in a hurricane off the coast of South America. When all the ship's water was gone the distraught captain radioed in for help from shore. He received the simple SOS: 'Drop your pail where you are.' At first disbelieving, the captain eventually discovered that the seawater there was sweet because it comes from the mighty Amazon River, which pours freshwater into the sea for miles at its mouth.

The story made Shah think about his own life. 'There I was bringing pomegranate plants from 2,000 kilometers away,' Shah realized. 'I was buying sweet corn and melon seeds from U.S. and Taiwan – everything from such distances. I wasn't dropping my pail where I was.'

The day after reading that story, Shah stopped at the gate in front of his farm and noticed a small patch of Aloe vera plants, growing happily with no human management. Though he had little knowledge of the potential market, and still less about how to process the aloe products, he decided to 'drop his pail there.' Shah had heard of its uses in ayurvedic healing and saw advantages in raising a crop that seemed be able to take care of itself.

He found little information existed for on-farm processing of the long succulent Aloe vera leaves. He and his wife began experimenting in their kitchen to learn how to extract the valued gel.

As he expanded production, he experienced new challenges. To counter plant-rot in low areas after the monsoon, Shah turned to a bed-and-furrow system that he extended to nearly his entire farm. He planted medicinal Malabar nut (A. Vasica) trees as a natural irrigation indicator. These help him restrict water to the minimum that keeps the gel value highest. He controlled weeds by letting the cattle graze rotationally. He controls diseases and pests by intercropping the Aloe vera with plants such as dates, amla (Indian gooseberry), melons, millet, castor, green gram, pigeon pea, vegetables and selected medicinal plants.

After four years of trial and error the couple perfected a suitable extraction and stabilization process. Shah's brothers converted a small building into an Aloe vera processing plant. They began marketing Aloe vera to cosmetic companies and continued to improve the quality of their Aloe gel.

Manish, Vijay's younger brother, worked to develop a health drink from their aloe gel. Manish joined 40 scientists from 26 countries in China to interact on aloe use. He returned with the confidence to prepare six specialty health beverages with selected medicinal herbs.

Mahendra, their elder brother, is using his marketing genius to expand production to the European Union next year. At times, all 17 members of Vijay's family, work together to keep the Aloe vera activities going.

Shah has expanded to 30 acres of Aloe vera. He continues to fine-tune production skills to maintain production even in dry years such as 2003, where plant color will be diminished but production remained constant. The date trees, which usually decline after a few years under chemical fertilizers, are producing so well that he has named many of them. 'They're like family members,' he says.

Vijay Shah also has a 14 acre plot under date cultivation. He has palms ranging from 3-16 years age. The early date palms in his farm were grown with seeds of unique heirloom fruits that his father relished. Except for monsoon season, the trees are irrigated around the year. Matured trees over 10 years of age require about 200 litre of water 2-3 times a week from April to end of June. The farm is under drip irrigation. According to Vijay Shah, from 8 years onwards a well managed tree can yield 100-150 kgs of fresh dates per season. 99.9% of Kutch dates are sold fresh in the market. Fresh dates have a shelf life of 3-5 days. He has not ventured into value addition and says, "When I'm able to sell fresh dates at Rs. 50-100 per kg and supply is always shorter than demand, there is no point in exploring value addition." Vijay Shah's farm yield is on an average 80 kgs of organic fresh dates per mature tree. The dates are harvested, graded, cleaned, packed and sent

ORGANIC COTTON: AGROCEL'S SUCCESS STORY

Agrocel independently began the conversion of farms in Kutch to certified organic cotton production in 1997. A joint project part-funded by the Shell Foundation began in 2001. About 1000 farms have been converted to organic cotton production so far in Kutch and the neighbouring district of Surendranagar, Kutch taking the larger share of the two.

The District of Kutch is effectively an island on the NW coast of India, bounded to the north and east by the salt desert of the Rann of Kutch and to the south and west by the Arabian Sea. About 30,000 ha of cotton are grown there.

The average landholding of each farmer is about 3 hectares, with a few holding large tracts of land. "Desi" cotton, varieties of the indigenous Gossypium herbaceum, is grown on about 7,000 ha in Kutch. These varieties, being deep-rooted, are fairly resistant to drought; they are also fairly resistant to pests. The variety Deviraj is an improved selection with a fibre length of 25-28 mm and greater yield potential of upto 3,000 kg/ha. Processing and marketing links have been set up and the system is now on its way to being self-sustaining.

Most of the certified organic cotton farms in Kutch grow Desi cotton. A typical three-course rotation in irrigated areas is cotton-legume-castor-cotton, while a typical four-course rotation would include sorghum or pearl millet or sesame after the castor. On the other hand, only one cotton crop is taken in rainfed and dryland areas. Both however also practice mixed cropping. Great attention is paid to soil condition and fertility, using vermicompost, farmyard manure, castor cake, and Azotobacter or Azospirilum cultures. Cow urine is added to irrigation water. Biomass is added to the soil as green manure and mulching is also practiced. Neem cake and oil are made from neem berries collected in the dry season as a supplementary source of income.

Generally speaking, insect and mite pests pose much less of a threat in Kutch than in other northern parts of India. This is probably due to the climate of Kutch which is drier, and which is also cooler later in the crop season from mid-late October, when the cotton is most at risk from pest attack.

Contact: Shri. Dilip dilipheaven@yahoo.com

(Source: Organic Cotton Farming in Kutch, Gujarat, India. A report by Geoff Jackson Email: geoff@gjackson9.wanadoo.co.uk and Agrocel).

(sometimes flown as well!) to metropolitan cities like Mumbai where his own family marketing network handles sales and distribution. Vijay Shah's dates go to various places across India. About 70% to Mumbai, 15% to Baroda, 10% local market and 5% to Ahmedabad, Delhi Bangalore, Rajkot, Bhavnagar, Jamnagar etc. Date cultivation is labourious work. Since Vijay Shah grows organic dates there is no spraying, but other jobs like pollination, preparing for harvest etc. are labourious and labour intensive. However, he does not grudge the labour as all efforts he says are well rewarded. Red palm weevil is a pest problem on the farm. This is dealt with by pouring boiling hot water on egg and larval lodging sites. Other pest and disease damages are insignificant, so, generally ignored. Vijay Shah learnt his lessons of date farming first hand on his farm with careful observation and by persisting with organic methods. According to him, quality organic dates can be grown with maximum production output through right feeding (inputs) and regulation of irrigation. Says Vijay Shah, "we have trench system wherein we go on depositing various organic wastes, old leaves, palm trunks, twigs, weeds, sea weeds, green algae, neem kernels, botanical shreddings like caltropis, euphorbia and waste aloe etc. All these are topped up with a concoction of fresh cow dung, cow urine, honey, pure cow ghee, jaggery, soured butter-milk etc. These trenches are irrigated by drip system. Intense microbial action and work of local earthworms assists in providing nutrients of high value to the palms. As an indicator for irrigation Adhatoda vasica is planted intermittently.

Income from date farming depends on the quality (taste) of fruit which is directly dependent on the nourishment provided. Says Vijay Shah, "Lazy and lousy farmers hardly manage to generate Rs. 5000 per acre while my best managed plot gives me a net income of Rs. 1 lakh per acre per season." One needs to climb date palm for pollination and harvesting and other maintenance activities. For protecting from thorns, the outer whorl of leaves is sliced off in January each year. It is possible to master the techniques of dealing with thorns in about three seasons. Shah has a crew of 4 experienced climbers in the age range of 20-40. Dates ripen on his plots over a period of 45 days every season- late June to early august This stretch of time allows for better marketing. Date fruit-bunches are generally covered in polythene sheets during the last phase of growing season to save the fruit from damage caused by early monsoon showers and cyclonic winds. Vijay Shah's Kharek (fresh date) plots sport high biodiversity. This he says is necessary for rich nutrients to the date palms and also for maintaining premium soil condition. Unnecessary green covers (over-grown weeds / branches) are shred using tractor mounted shredder from M/s. Bhide & Sons of Sangli, Maharashtra. Vijay Shah's dates are sold as "NuTech Farms' Selected Organic Dates". Premium quality products are sold at Rs. 100-120 per kg and medium range fetches Rs. 30-80 per kg.

The farm is certified by Indocert.

Products: Aloe vera products, whole Aloe very dry powder, dates, Calotropis, seaweed, green algae.

(Source: Communication with OIP)

MULCHAND HARIA

Kutch Sanjivani Farm, At : Bidada, Taluka : Mandvi, District : Kutch – 370 435, Gujarat.

Phone: 02834 244269 / 244124

This organic farmer grows amla, mango, pulses wheat, bajara and fodder on his 60 acres farm. He makes medicines from cow's urine.

(Source: Vijay Shah, NU-TECH Farm)

MANOJBHAI PARSOTTAMBHAI SOLANKI

Village Madhapar, Taluka Bhuj, District Kutch, Gujarat. Ph.: 02832 241182, Cell: 09825428100

Solanki owns 80 acres of land of which 60 acres is irrigated and 20 acres is rain fed. He is practicing organic farming since 2002. He was inspired to take up organic farming after his meeting with Sarvadaman Patel, Bhaskar Save and Mahendra Bhatt. He maintains a gaushala with about 90 cattle. This is adequate for the farm's manure, compost and vermicompost requirements. He uses gaumutra, various cakes, mulching, crop rotation and mix cropping as techniques for good organic farming. Insects are controlled through maintaining biodiversity, using cow urine, neem oil, tobacco powder etc.

He cultivates potato, onion, tomato, mango, papaya, fig, guava, pomegranate, castor, isabgul, fenugrick, mung, sesame and wheat. The farm yield is about 20 % less as compared to his counterparts practising chemical farming. This he admits is because of his inability to pay enough attention to farming due to other engagements.

He runs a small eco-shop from his home and has arranged an excellent business tie up to export castor oil. (J)

MAGANBHAI AHIR

Village Ningal, Taluka Anjar, District Kutch, Gujarat. Ph.: 02836 276528, Cell: 09979319629

Maganbhai Ahir owns 29 acres of land, of which 19 acres are irrigated and 6 acres are rainfed. He is practicing organic farming since 2000. Maganbhai is associated with Swadhyay activity, which inspired him to follow organic farming. He has also reduced usage of chemicals in the area where he follows chemical farming.

He has used silt from the near by pond to improve farm soil. Dry cotton plants are used for making compost. This he claims has helped reduce irrigation requirements by 30%.

In the initial years, he had to try hard to sell his produce, but now consumers themselves are asking for Maganbhai's organic produce. There was an instance once, when another farmer was selling his produce, claiming it to be Maganbhai's. This has made him alert and cautious when dealing with the market.

He grows mung bean, groundnut, bajri, wheat, lucerne and cucumber organically. (J)

SATVIK

26, Banker's Colony, First Lane, Near Jubilee Ground, B/H Syndicate Bank, Bhuj – 370 001

Kachchh, Gujarat. Ph. 02832 651779, Fax: 02832 251914, Email: satvik.india@gmail.com

The root of 'Satvik' is the Sanskrit word 'Satva', meaning truth. And, only truth is sustainable. Satvik believes that the way forward for a sustainable future is adoption of farming practices that are ecologically sustainable. Its focus is on traditional seeds and rainfed farming. It aims to mainstream ecologically sound farming practices.

Self motivated farmers, who as a conscious decision opted for organic farming in the mid 1990s came together and formed the Kachchh Sajivkheti Manch (KSM) in 2000. Its aim was to develop organic farming and promote organic practices. Initially, the activities were carried out with the support of progressive organic farmers, aware consumers and like minded organizations like Sahjeevan etc. Its activities since then have grown many fold. KSM registered itself as a society in 2007 under the name Satvik. Satvik has farmers, academics, activists and people from the corporate sector on its board.

Satvik's vision is to become the centre of excellence in ecological farming for arid and semi-arid areas (across the range) from farming to post harvest handling and marketing. It supports farming families in rainfed areas by providing information and market support. Horticulture under irrigated conditions is also promoted in some areas.

At one end of its spectrum of engagements Satvik has developed partnerships in more than 300 villages of Kutch with grassroots organizations whose objectives are in line with theirs and at the other end it engages with agri scientists and agri-universities. It has also created links with certifying agencies and industry to maximize its marketing reach. Presently Satvik is working in the Kutch district where 80 % of agriculture is rain fed. Satvik has established a mandatory quality control system that carries out internal approval for the organicness of produce. It organises regular Farmers' Training and Exposure, Training of Para Professionals and Training of Trainers.

Satvik provides support to Akhail Gujarat Sajivkheti Samaj to carry out policy initiatives.

It is actively involved in promoting the Participatory Guarantee System (PGS) for organic certification in India. Satvik is planning to take up advocacy on technical and financial support required for small holder certification, especially in rainfed areas.

Results of experiments conducted by Satvik and experiences are regularly disseminated using varied meda. In collaboration with Sarvani (Kachchh Mahila Vikas Sangathan's Media Cell), Satvik has developed 16 episodes of radio programmes named 'Sajiv No Saad'. The programme targets technology transfer in agriculture and animal husbandry, case studies of success stories, information of various government schemes etc. 'Sajiv No Saad' is now available on CDs in MP3 formats at a cost of Rs. 200/- for the entire set of six. To communicate various organic practices, it has developed educational material in the form of commentary based slide shows to improve communication. These materials are available on CDs in VCD formats at Rs. 30.

Besides these, Satvik has published printed material on various themes of organic farming. These are available at very reasonable rates: Rs. 10 to 30. (Organic products from Satvik are listed in the Green Shops Section of this book.)

(Source: Communication with OIP)

VELAJIBHAI MULAJIBHAI BHUDIA

Village Madhapar, Taluka Bhuj, District Kutch, Gujarat. Cell: 09426991112

A local farmer leader Velajibhai owns 100 acres, of which 70 acres are under orchard and 30 acres are under seasonal crops. Says Bhudia, "I experienced that chemical farming used too much of energy and water making agriculture very expensive." In 2001, he came across an organic farm that was using gaumutra and drip irrigation and started organic farming. He has installed drip irrigation in his 70 acre mango and amla orchard.

To control insect pests, he makes use of neem and akada leaves. In mango, to control sucking pests, the trees are fumigated 3 times at weekly intervals with dry cow dung and vavding.

He has his own processing unit and cold storage for making pulp and juice of mango and amla. This is marketed locally and in Mumbai. (J)

SHAILESH GOR

B-497, RTO Relocation site, At Bhuj - 370 001, District Kutch, Gujarat. Cell: 09374353853

Gor started organic farming in 2007. His 2 acre farm is 100% organic. He grows pearl millet, wheat, sorghum, green gram, mango, guava, chickoo, papaya, vegetables and fodder. (J)

SHIVAJI DAMJI SHAH

Abadasa Gaushala Trust, At Rapar Gadhwali Taluka Abadasa - 370 645, District Kutch, Gujarat. Ph.: 02831 273256, Cell: 09979523997.

Shah started organic farming in 2001. His 35 acre farm is 100% organic. He grows fodder for a gaushala with 300 animals. (J)

KHUSHALBHAI JIVRAJ BHEDA

At Bhujpur, Taluka Mundra - 370 405, District Kutch, Gujarat. Ph.: 02838 240021, Cell: 09726681601.

Bheda started organic farming in 1990. His 50 acre farm is 100% organic. He grows pearl millet, wheat, green gram, sesame, kesar mango, dates, coconut, chickoo, bijora and also fodder for 15 animals. (J)

PRADIP MAKWANA

Makwana Krishi Tirth, At Sinogra, Taluka Anjar - 370 110, District Kutch, Gujarat. Cell: 09427211285

Makwana started organic farming in 2001. His 110 acre farm is 100% organic. He grows pearl millet, wheat, green gram, castor, kesar mango, dates, coconut, chickoo, bijora, amla, lemon, custard apple, mulberry, vegetables and also fodder for 25 animals, mainly cows. (J)

L.D.SHAH

Jalaram Bag, At Bidada, Taluka Mandvi - 370 435, District Kutch, Gujarat. Ph.: 02834 244177.

Shah started organic farming in 1995. His 14 acre farm is 100% organic. He grows chickoo, dates, amla and processes delicious dry chickoo chips. (J)

NARSIBHAI KHETABHAI PATEL

At : Anandpura kampa, Post : Modasa, Taluka : Modasa, District : Sabarkantha – 383 315, Gujarat. Phone: 02774-240811, Cell: 09427698492

Narsibhai's farm is located on the outskirts of Anandpura Kampa village. He belongs to a farming family and is practicing organic farming for the past 2 years on his 3 acres farm. Previously he was using chemicals. He grows pumpkin, guava, cucumber, wheat, corn, green gram, soyabean, castor, fennel and cumin seeds.

'We realised that in chemical farming there is nothing that we can give to our children in the future. Also the good insects will die. Our health will improve with organic farming, apart from improvement in the soil,' is how he explains his decision to switch to organic farming.

He uses bullocks for farming, sprays organic pesticides, and uses pheromone traps, neem oil, cow urine, cow's milk and herbs to protect his farm from pests. There is not much that he sells in the market but whatever is surplus is sold locally for a good price.

The first year he changed to organic farming he found it a little difficult to learn the new techniques. There was also a loss of 30% which next year reduced to 10%. Now the quantity is as before. However, the produce from organic farming is sweet and tasty. Pests and disease have also reduced.

KANCHRABHAI HARIBHAI PATEL

At & Post Umedgadh, Taluka : Idar, District : Sabarkantha – 383 230.

Kanchrabhai's farm is 12 acres. He grows grain, corn, wheat, cotton, castor, jira, variyali, pulses, udad, moong, soyabean, ashwagandha, kasiyatu, jampal, pomegranate, chickoo, drumsticks, amla and lemon.

A chemical farmer, he started practising organic farming from June 2001. Kanchrabhai says that he changed due the harm caused by chemical farming and the information he read about its disadvantages from local newspapers.

He uses organic manure, castor oil cake and phosphate on his farm. He maintains 1 buffalo and 2 bullocks. He feels that till now he was using, eating and cultivating poison but now he wants to consume good food and also to give others healthy food. He says organic farming is difficult to practice as the farmers do not work on sharing basis, hence the expenses increase and the prices they get for their produce is also less.

In case of pest attack he uses ratan jyot, aloe vera, tobacco, neem seed extract, cow urine, butter milk and castor oil. (J)

RAJNIKANT K PATEL

Jeevan Jyot Society, At & Post : Modasa, Taluka: Modasa, District : Sabarkantha -383315, Gujarat. Ph: 02774-243638, Cell: 09428484728

Rajnikant's 3 acres farm is located at Kishorepura Bayal Modasa. He belongs to a farming family and has been practising farming since 1982. In 1995 he became an organic farmer. He grows corn, wheat, variyali, castor seeds, pulses, mustard, chana, jeera, isab gool etc.

He uses organic manure, herbicide, vermicompost, bone powder, castor seeds on his farm. Herbs and organic pesticides are used to protect the farm from pests. He is also trying seed management to keep pests away.

It took him 5 years to attain the regular output which he attributes to deficiency of nitrogen in the soil. He does not regret the switch away from chemicals because by farming organically one gets pure food to eat, the soil is preserved and no harm is caused to the environment. (J)

DHANJIBHAI SURMABHAI DAMOR

At Rudral (Sarvodaya Yuvak Niketan), P.O. Dhambolia, Taluka Bhiloda - 383 355, District Sabarkantha, Gujarat. Ph.: 02771 283496.

Damor started organic farming in 2001. His 4.5 acre farm is 100% organic. He grows maize, wheat, pigeon pea, green gram, black gram, castor, sesame and vegetables. (J)

HIRALAL RAMJIBHAI PATEL

At Krishnapura, P.O. Kalodra, Taluka Talod - 383 305, District Sabarkantha, Gujarat. Ph.: 02770 233436, Cell: 09426508676.

Patel started organic farming in 2001. Today 80% of his 11 acre farm is organic. He grows wheat, castor, groundnut, sesame and potato. (J)

TALSHIBHAI JAYCHANDBHAI PATEL

At Samalapur, Taluka Idar - 383 430, District Sabarkantha, Gujarat. Ph.: 02778 247205.

Patel started organic farming in 1999. His 13 acre farm is fully organic. He grows maize, wheat, sorghum, black gram, green gram, pigeon pea and groundnut. (J)

GOVINDBHAI BABABHAI PATEL

At Sonasan, Taluka Prantij - 383 210, District Sabarkantha, Gujarat. Ph.: 02770 240504.

Patel started organic farming in 1999. His 14 acre farm is 100% organic. He grows maize, wheat, sorghum, kidney bean, green gram, pigeon pea, castor and vegetables. (J)

ISHWAR SINGH

Mistiote Farm, Parthampura, Savli Taluka, Vadodara District – 391 780, Gujarat. Phone: 02667 244544, Cell: 09426975060, 9726139470 Email: misriote@gmail.com

The 30-acre (approx) farm is located on the banks of the Mahisagar river, 30 kms. from Baroda on the NH-8 Ahmedabad highway. Singh grows mango (kesar, langda), jamun (Eujinia jambolana) lime, awla, sitaphal (custard apple), ginger, onions, vegetables, pulses, oil seeds for oil extraction, etc. He also produces organic processed food on a small scale. His main occupation however is dairying. He produces, packs and delivers over 100 litres of cows milk to 80 homes in Baroda daily. The cows are kept at the farm and fed a variety of fodder, i.e. oats, lucern and maize apart from other grasses. The farm being located in a picturesque setting, is also let out for group parties. This apart, two cottages attract stayover guests. The income from such activities supports the running of the farm.

He belongs to an agrarian family and has been doing organic farming for the past nine years. Earlier he had tried using chemical fertilisers a few times but then stopped immediately on realizing its futility. He uses bio-dynamic compost, farmyard compost, vermiculture, gobar-gas slurry, mulch as fertiliser for his farm. He practices techniques such as crop rotation, moon-sun-star cycle, mixed cropping, planned watering to improve the production.

He has fifteen cows, three calves, chickens and a tortoise on the farm. The produce is sold in the local market and also in Baroda, Anand, Ahmedabad fetching a good price.

He enjoys farming and feels that organic is the best way to live, but laments that a slightly better price for the produce would have really made his day.

(Source: Communication with OIP)

DINESHBHAI BABUBHAI PATEL

Mahadev Faliya, At & Po : Sokhda, District: Vadodara
-391745, Gujarat. Phone-0265-2886175

Dineshbhai has a 15 acres farm. He cultivates amla, vegetables, drumsticks, brinjal, cucumber, karela, flowers, grains, soyabean, wheat, etc.

He is practicing organic farming for the last 9 years. It took some time for the produce to stabilise. Initially the produce decreased by 50% but after that it increased gradually.

He maintains cattle.

He sells his entire surplus in the local market at regular market rates. He is not satisfied with the income that he gets from organic produce.

He feels that organic farming is difficult only because there are plenty of pests and disease, there is no market for the surplus produce so the returns are less than he expects to get. (J)

BADRIBHAI SOMABHAI PATEL

At: Dharampuri, P.O: Valavav, Taluka: Savli, District: Vadodara – 391 774, Gujarat.
Phone: 02667 235368

Badribhai has been involved in farming since 1980. He has two farms, one of 11.19 acres and the other of 5.22 acres located in Dharampuri village. Cotton, soyabeen, cumin, red gram, maize, etc., are grown on the farm.

In 1980, when he started farming he was using chemical fertilisers and pesticides. But, within 5 years he realized the costs of chemicals were high and its use was not good for the land in the long run. So he started reading books on Indian farming and also did some experiments to find alternatives. It took about 7 to 8 years for him to change to organic farming but since 1990 the farm is fully organic.

Less tilling, more mulching and bio-control are some of the techniques that he practices. He has planted tulsi, akdo, marigold, neem, etc., on the borders of the farm and also uses cow urine, panchagavya, herbal extract, etc., to protect the farm from pests.

Farm products are sold in the local market.

SUDHIRBHAI BHANJIBHAI GALA

301, Shrinath Terrace, 7-Vrajwadi, Jetalpur Road, District Vadodara - 390 007, Gujarat. Ph.: 0265 2313714 (R), 2561758 (O), Cell: 09825754617.

Gala started organic farming in 1993. His 5 acre farm is 100% organic. He grows pearl millet, paddy, wheat, mango, chickoo, custard apple and amla. (J)

MANUBHAI MOTIBHAI PATEL

At Aajod, P.O. Aajod, Taluka & District Vadodara - 391 740, Gujarat. Ph.: 0265 2886151, Cell: 09925037998.

Patel started organic farming on his 2.5 acre farm in 2000. He grows pearl millet, wheat and vegetables. (J)

KANUBHAI KALIDAS PATEL

'Jabak', At Lamdapura, P.O. Lamdapura, Taluka Savli - 391 775, District Vadodara, Gujarat. Ph.: 02667 290547, Cell: 09725922605.

Patel started organic farming on his 1 acre farm in 2000. He grows wheat, horse gram, soybean, vegetables, cotton and mustard. (J)

ANUJBHAI N. PATEL

703, Sainath Heights, Near ISKCON Temple, Gotri Road, District Vadodara - 390 021, Gujarat. Ph.: 0265 2351628.

Patel started organic farming on his 54-acre farm in 2000. He grows wheat, pigeon pea, ground nut, vegetables and spices. (J)

YOGINI-SMITA HARISH

Patel Faliyu, At Koniya, Via Sadhli, P.O. Ranapur, Taluka Karjan - 391 250, District Vadodara, Gujarat. Ph.: 02666 261411 (R).

Yogini and Smita started organic farming in 2003. On their 5 acre farm they grow wheat, sorghum, green gram, math, pigeon pea, black gram, castor and cotton. (J)

KIRITBHAI SHAMBHUBHAI PATEL

1, Dwarika Soc., Near Narmada Guest House, Race Course - 390 007, District Vadodara, Gujarat. Cell: 09426074885.

Patel started organic farming in 1997. His 7 acre farm is 100% organic. He grows wheat, pigeon pea, green gram, amla, guava and vegetables. (J)

Kiritbhai Shambhubhai Patel working on his farm

KIRITKUMAR NATWARBHAI PATEL

Kumbharwada Lane, Near Dairy, At Mobhagam, Taluka Padra - 391 430, District Vadodara, Gujarat. Ph.: 02662 242418, Cell: 09904075208.

Patel started organic farming in 2003. On his 60 acre farm he grows wheat, green gram, pigeon pea, black gram, horse gram, math, castor, sesame and cotton. (J)

NIRMALABEN MAHESHBHAI PATEL

Patel Farm, At Dharmpuri, Taluka Dabhoi, District Vadodara, Gujarat. Cell: 09327905690.

Patel started organic farming in 1992. His 4 acre farm is 100% organic. He grows paddy, green gram, mango, chickoo, coconut, guava and vegetables. (J)

MEHULBHAI PANCHAL

318, Swaminarayan Nagar, Chhani Road, Nizampura - 390 002, District Vadodara, Gujarat. Ph.: 02663 290409, Cell: 09825326548.

Panchal started organic farming in 2003. His 7 acre farm is 100% organic. He grows fruits and vegetables. (J)

RAJESHBHAI ZAVERI

401, Payal Tower, Sayajigunj, District Vadodara - 390 005, Gujarat. Ph.: 0265 2226201, Cell: 09825040326.

Zaveri started organic farming in 2001. His 155 acre farm is fully organic. He grows paddy, wheat, green gram, black gram, horse gram, sesame, mango, chickoo, vegetables and sugarcane. Teak wood is cultivated on part of the farm. (J))

L.N. SHAH

Samiyala-Padra Road, Bh. Gujarati School, Taluka & District Vadodara, Gujarat. Cell: 09924483578.

Shah started organic farming in 2002. He grows mango, chickoo, gauva, coconut and vegetables on his 5 acres farm. (J)

DR. VIKRAMBHAI PATEL

Muni Sewa Ashram, At & P.O. Goraj, Taluka Waghodia, District Vadodara, Gujarat. Ph.: 02668 268064, 268010.

The Muni Seva Ashram farm's 900 acres are fully organic. Paddy, wheat, mango, lemon, vegetables and sugarcane are cultivated. (J)

ARUN P. SHETH

Darshan Farm, At : Chekla Rani, Post : Dolarana Vasna, District: Gandhi Nagar, Via :Ahmedabad, Gujarat. Phone: 079-23945553, 23945894, 26926231, 26400252 (Chiragbhai). Email:cpparekh@yahoo.co.in

Sheth's family-owned farm admeasures 44 hectares. He has been doing agriculture since 1960. As a USA-trained chemical engineer he followed modern farming practices for 30 years and used plenty of chemical fertiliser. However, he changed over to organic farming practices in 1992 and stopped buying chemical fertiliser. He has five men working full time on his farm.

The sandy loam soil has a pH of about 7.9. In this area, the average rainfall is 500 to 750 mm spread over mid-June to the end of September.

Sheth owns a tractor, a cultivator and a drill. These mechanised implements are employed in the cereal as well as the horticulture area.

Sheth does not own any livestock. However, the employees have cows and buffaloes. He grows a variety of elephant grass, which he gives free of cost to the employees as fodder for their cattle. In return, the employees give Sheth the animal dung, which he uses for producing vermicastings.

On 44 hectares he grows several fruit trees, like jujube, guava, lemon, Amla, mango, Oranges and coconut. Sheth has grown sun hemp to be used as green manure. Each variety is grown on separate plots of two to five hectares. Only mango and coconut are mixed, the reason being that if coconut, which is not native to the area, does not grow well, then he has at least the mango trees.

According to Sheth, the best way to get healthy crops and plants is to observe them carefully. At least once every week, he takes a round of his field to personally check each and every tree. When the plantation was young and he was practising modern farming, the mortality of his young saplings was around 60 per cent due to gamophyte and wild monkey invasion. Since he switched over to organic farming, the mortality has declined to five percent, which is mostly caused by monkey attacks.

Extract of neem, garlic and chili as well as cow urine are used as biocontrollers. They are all produced on the farm. To produce neem extract, neem leaf paste is soaked in water for 24 hours. These extracts are diluted with water in 1:100 ratio.

The garlic-chili extract is obtained by keeping equal quantities garlic and chili paste in kerosene for 24 hours. Fresh cow urine is used directly and does not need any special preparation. Cow urine is used as treatment only against different fungi and the garlic-chili extract against fruit flies.

Neem extract is used as a preventive treatment against sucking and biting pests. From the flowering season to the fruiting season, the trees are sprayed every 15 days with neem extract.

No special weed management plan is followed. Weeds and grass are cut once after monsoon with hand sickles and they are used as mulch. They cut and mulch the weeds around the trees twice a year. On the arable land, the weeding process is done by harrowing. The irrigation of the plantation in winter and summer is by porous pipe system, where porous pipe is laid under ground from which water circulates. It saves power and work. Thanks to the mulch cover, the evaporation rate is minimal. In addition to the mulch, 20 tonnes of vermicasting are applied on the 28 hectares of plantation area. Two kilos of neem and castor cake to each tree are used once in a year.

In 1960 the ground water level was about 21 metres below the surface. But poor rains and drawing out of ground water has led it to drop to 120 meters. To raise the ground water level, Sheth harvests the rainwater and diverts it to an open well.

In the arable land the irrigation is done by the flood system, while a drip irrigation system is installed in the cotton growing area.

Sheth purchased 500 Australian earthworms to start vermiculture. Now he has now his own vermicast production. In the winter and summer, he produces vermicasting in the open. But in the monsoon season, the motherbed is installed in the cowshed. From 80 tonnes of cow dung, he realises around 30 tonnes of vermicasts. He sells one third of the quantity of vermicasts while two thirds is used on the farm.

At harvest time, Sheth sells fruits through contracts for plucking on an individual tree basis. Normally he gets between Rs 37,000 to 52,000 per hectare. As the expenses are around Rs 10,000 per hectare, his profit is, at least, Rs 35,000 per hectare. If he followed chemical farming, he estimates that his expenses would be at least double for the same yield.

(Source: Jatan and Chiragbahi)

RAJENDRASINH ANDUSINH RATHOD

Parishram Farm, At Pimplaj, P.O. Pethapur, Taluka & District Gandhinagar - 382 610, Gujarat. Ph.: 079 23278263, Cell: 09426502197.

Rathod is an organic farmer. Of his 12 acre farm, 45% is organic. He grows wheat, paddy and amla. (J)

KRUSHI VIGYAN KENDRA

Gujarat Vidyapith, Randheja, P.O. & District Gandhinagar - 382 620, Gujarat. Ph.: 079 23232951 (R), 23975223 (O).

Contact: Anilbhai

Krushi Vigyan Kendra is practicing organic farming since 1996. Half the 65 acre farm is now organic. They grow wheat, paddy, castor, chickoo, lemon, amla, custard apple and cotton. (J)

JAYANTIBHAI P. PATEL

Bahucharpura, At Ridrol, Via Lodra, P.O. Ridrol, Taluka Mansa - 382 835, District Gandhinagar, Gujarat. Ph.: 02663 273189.

Patel started organic farming in 2004. On his 5 acre farm he grows sorghum, castor, sesame, cotton and vegetable. (J)

POPATBHAI NANJIBHAI VAGHANI

Near old Kumarshala, At & Po: Pipardi, Taluka : Shihor, District: Bhavnagar -364230, Gujarat. Phone-02846-282269, M: 09426565837

Popatbhai's approximate 10 acre farm is located in Pipardi village. He is practising farming for the past 26 years. He inherited the farmland from his ancestors. He grows til, groundnut, bajra, moong, moth, udad, jawar, wheat, chili, bringal, onion, ajwain, variyali, dhaniya, jeera, etc.

Popatbhai is practicing organic farming since1999. Earlier he used chemicals even though he found them very expensive. He found the soil getting degraded with chemical farming and he felt that he was eating poison that is when he switched to organic farming.

The inputs used on his farm are dung manure, mulch and vermicompost. These organic inputs help to make the soil soft. He maintains 3 cows and 3 bullocks. He uses all the waste from the fields as well as cow urine, cow dung, aloe-vera, neem leaves, etc., to prepare compost. He finds it difficult to grow cotton, bajra and wheat.

He protects his farm through traditional techniques. He uses buttermilk, lemon, aloe-vera, ankdo, cow urine, vermiwash and also gives wash of thor-milk to the seed while sowing.

He sells all the surplus produce to Jatan. Popatbhai says, to change to organic farming one needs to plan it properly only then can s/he be assured of a good yield. For instance, if raw material is bought collectively it can bring down the costs significantly. (J)

PANCHAKUTI ORGANIC FARM - MAHENDRABHAI LALLUBHAI PATEL

Panchkuti Bio Organic Farm, Dehgam, N. H. No.8, Ranchhodpura, Near Dabhan Taluka Nadiad, District Kheda, Gujarat. Ph.: 0268 2560901, Cell: 09429032611.

Patel started organic farming in 2003. His 17 acre fully organic farm grows pearl millet, paddy, wheat, coconut, chickoo, custard apple, mango, falsa and vegetables. (J)

VIJAYSINH POPATSINH MAHIDA

At Kamla, Taluka Nadiad - 387 020, District Kheda, Gujarat. Ph.: 0268 2568958, Cell: 09998461556.

Mahida stared organic farming in 2001. At the moment only half his 5 acre farm is organic. He grows fruits. (J)

PURVI VINOD VYAS

Vasudhani Wadi, Near Rohit Vas, Opp. Manav Pariwar, Matar, Taluka Matar, District Kheda, Gujarat. Ph.: 02694 291582, Cell: 09979358103.

Vyas started organic farming in 1997. His 5 acre farm is 100% organic. He grows mango, chickoo, coconut, amla and custard apple. (J)

HARESHKUMAR KANAKRAI TRIVEDI

At Malataj, Taluka Mahemdabad, District Kheda, Gujarat. Ph.: 02694 76818.

Trivedi started organic farming in 2006 on his 26 acre farm. Fully organic today, he grows wheat, soyabean, vegetables and cotton. (J)

MAYANKBHAI MOHANBHAI SHAH

Mahudiapara, At Mahij, Taluka & District Kheda - 380 028, Gujarat. Cell: 09426525427.

Shah started organic farming in 2002. On his 4 acre farm he grows pearl millet, paddy, wheat, pigeon pea, sugarcane, mango, papaya and vegetables. (J)

BHALANI AMBAVIBHAI JAIRAMBHAI

Nava Talot, At Sondarda, Post Kevadra, Taluka Keshod, District Junagadh -362 227, Gujarat. Ph.: 02871 234449

Bhalani has a 6 acre farm. Herbs are grown on the border of his farm. On half an acre, he does mixed farming, on the rest, sitaphal and amla are cultivated. His farm is bordered with herbal plants.

He worked for Lok Bharti at Sanosara, Bhavnagar, a well known Gandhian educational institute. He was one of the researchers on a well known wheat variety: LOK-1. On retirement, he took to farming. His research into further improvement of wheat varieties continues.

He uses cow urine, vermicompost and natural pesticides such as neem, akdo, neem oil and kidamari. He prepares his own compost in a large open pit under a tree into which all the food waste, cow dung, cow urine etc. are dumped. The on farm generated organic manure is adequate for the farm.

Labour remains a problem because of the close vicinity of his farm to the industrial area. His produce is in great demand for its premium quality. (J)

SHREE GAURAKSHA PANJRAPOLE

Visavadar - 362 130, District Junagadh, Gujarat. Ph.: 02873 222144.

The Shree Gauraksha Panjrapole grows organic wheat, maize and rajko on its 32 acre farm. (J)

KIRAN J. SHETH

At Delwada, P.O. Delwada, Taluka Una - 362 510, District Junagadh, Gujarat. Ph.: 02875 252512, Cell: 09824283228, Email: skk21@sancharnet.in.

Only half of Sheth's 2 acre farm is organic. He grows wheat, maize, groundnut, sesame and mustard. (J)

KARSANBHAI NATHABHAI KARMATA

Sharda Soc., Near Gigabhai Sentringwala, At Veraval - 362 266, District Junagadh, Gujarat. Ph.: 02876 244288, Cell: 09427229603, 09426850957.

Karmata is an organic farmer. His 26 acre farm is fully organic. He grows wheat, pearl millet, groundnut, chickoo, mango, custard apple and vegetables. (J)

DHIRUBHAI GOVINDBHAI ZANKAR

At Delwada, P.O. Delwada, Taluka Una - 362 510, District Junagadh, Gujarat.

Zankar started organic farming in 2001. His 6 acre farm is 100% organic. (Source: Jatan)

KANTIBHAI RAMJIBHAI TAMALIA

At post. Surendranagar, Taluka Wadhawan, District Surendranagar – 363 001, Gujarat. Ph.:02752 230583, Cell: 09426373919

Kantibhai Ramjibhai Tamalia comes from a farming background and is practising farming for 13 years. On his 11 acre farm located at Khodu village he grows cotton, wheat, bajri, vegetables, etc.

He switched from chemical farming to organic practices seven years ago. The move has been rewarding to the land and has brought him personal peace.

He keeps cows and sells the surplus milk to relatives and friends. The dung is used for preparing compost. Farm pests are dealt with using 'gau-mutra', neem oil, pheromone traps and aromatic insect repellent plants.

He finds it difficult to practice organic farming because he cannot get good seeds. Further, there is no good price for organically grown food and people don't appreciate the farmer's effort. Still he does not regret his decision and is satisfied with the output of his farm.

(Source: Communication with OIP)

AJITSINGH JATUBHA ZALA

Undi Sheri, Nr. Kanyashala, At Limdi, Taluka Chuda, District Surendranagar – 363 421, Gujarat. Cell: 09328726979

Ajitsingh has a six acre farm. Five years ago he switched to organic farming after having farmed with synthetic inputs for five years as he was facing water shortage due to scarce rain. He grows til, bajra and cotton on his farm.

According to Ajitsingh, deep filling of sand and sowing at the correct time gives good results in organic farming. There are no pests on his farm and in case of necessity he uses neem seeds to deal with them. The surplus organic produce is sold to Botad Market Yard. The Government sometimes helps them to get good prices for their produce.

He did not take time to convert to traditional organic farming from chemical farming but he did find that the production reduced. Still, he is happy with his decision as organic farming does not harm the soil, reduces labour and the produce is healthy. Due to less production his neighbour farmers do not want to opt for organic farming, but they appreciate his work. (Source: Information Sheet)

GAURIBEN-SAMATBHAI JADA

At Dharei, Po Dharei, Taluka Chotila, District Surendranagar - 363 520, Gujarat. Cell: 09979976218

This is a couple practicing organic farming with very high level of commitment and vision since 2003. Both work on their farm for not less than 12 hours a day. Their farming is divided over 3 major pieces of land, totalling to 19 acres.

They grow cotton, ground nut, cumin, wheat, til, gram, mung. They also spare time for promotional activities. A couple of years ago they grew 13 varieties of non-Bt cotton to look for an alternative to Bt cotton. Finally they made a selection of two varieties to be grown over a large area. These varieties yielded more than the adjoining Bt cotton plots of their neighbour farmers.

The couple is very down to earth and lives a very simple hard working life. People like them are the real wealth of the organic movement of Gujarat. They have four children. (J)

ALKUBHAI DADABHAI KHACHAR

At Ninama, Via Sudamadi, Taluka Sayla - 363 440, District Surendranagar, Gujarat. Cell: 09925735110.

Khachar started organic farming in 2000. On his 22 acre farm he grows pearl millet, sorghum, green gram, sesame, castor, cumin, mustard and cotton. (J)

PATHUBHAI GANDUBHAI RATHOD

At Thoriyali, Taluka Sayla - 363 430, District Surendranagar, Gujarat. Ph.: 02755 295210, Cell: 09825621041.

Rathod is an organic farmer. On his 62 acre farm he grows pearl millet, sorghum, wheat, green gram, methi, sesame, groundnut, cumin and cotton. (J)

BHUPATBHAI BHAGABHAI KOLI

At Korda, Taluka Chuda - 363 410, District Surendranagar.

Koli started organic farming in 2001. On his 5 acre farm he grows pearl millet, sorghum, wheat, green gram, math, gram, sesame, cumin and cotton. (J)

SANGRAMBHAI RANCHHODBHAI KOLI

At Korda, Taluka Chuda - 363 410, District Surendranagar, Gujarat.

Koli started organic farming in 2001. He grows pearl millet, wheat green gram, math, gram, sesame, groundnut, cumin and cotton on his 4 acre farm. (J)

GAGJIBHAI ZAVERBHAI LIMBADIA

At Korda, Taluka Chuda – 363 410, District Surendranagar, Gujarat.

Limbadia started organic farming in 2001. His 5 acre farm is 100% organic. He grows pearl millet, sorghum, wheat, green gram, sesame, cumin and cotton. (J)

MANUBHAI KARSHANBHAI RABARI

At Korda, Taluka Chuda - 363 410, District Surendranagar, Gujarat.

Rabari started organic farming in 2001. His 2.5 acre farm is fully organic. He grows pearl millet, gram, sesame, cumin, cotton and chili. (J)

ITESHKUMAR RAVJIBHAI LAKUM

At Chuda, P.O. & Taluka Chuda - 363 410, District Surendranagar, Gujarat.

Lakum started organic farming in 2001. His 3 acre farm grows pearl millet, green gram, sesame, cumin, cotton and chili. (J)

HEMUBHAI BHANUBHAI DODIA

At Chuda, P.O. & Taluka Chuda - 363 410, District Surendranagar, Gujarat.

Dodia started organic farming in 2001. His 6 acre farm is totally organic. He grows pearl millet, wheat, green gram, sesame, cumin, cotton and chili. (J)

VINUBHAI NARAYANBHAI PATEL

Old Morvad, Taluka Chuda - 363 410, District Surendranagar, Gujarat.

Patel started organic farming in 2001. His 8 acre farm is 100% organic. He grows pearl millet, sorghum, wheat, green gram, gram, sesame, cumin, cotton and chili. (J)

GATORBHAI NANJIBHAI PATEL

Old Morvad, Taluka Chuda - 363 410, District Surendranagar, Gujarat.

Patel started organic farming in 2001. His 23 acre farm grows pearl millet, sorghum, wheat, green gram, math, gram, sesame, cumin and cotton. (J)

JAGATBHAI BHAVANSANG KATHIA

At Ramdevgadh, Taluka Chuda, District Surendranagar, Gujarat.

Kathia started organic farming in 2001. He grows pearl millet, wheat, green gram, gram, sesame, cumin, cotton and chili on his 3 acre plot. (J)

BHAVANSANG AMARSANG KATHIA

At Ramdevgadh, Taluka Chuda, District Surendranagar, Gujarat.

Kathia started organic farming in 1999. His 7 acre farm is 100% organic. He grows pearl millet, wheat, green gram, gram, sesame, cumin, cotton and chili. (J)

NATHUBHAI JETHABHAI PATEL

At Ramdevgadh, Taluka Chuda, District Surendranagar, Gujarat.

Patel started organic farming in 2001. His 7 acre farm is 100% organic. He grows pearl millet, wheat, green gram, gram, sesame, cumin, cotton and chili. (J)

NARENDRABHAI RAVJIBHAI LAKUM

At Sayla, P.O. Sayla, Taluka Sayla, District Surendranagar, Gujarat. Cell: 09426233084, 09898738836.

Lakum started organic farming in 2001. His 12 acre farm is 100% organic. He grows pearl millet, wheat, green gram, sesame, papaya, cumin, cotton, vegetables and onion. (J)

CHINUBHAI KETSIBHAI PATEL

Parishram Garden & Nursery, Opp. Market Yard, Dhangadhra Road, At Halvad, P.O. & Taluka Halvad - 363 330, District Surendranagar, Gujarat. Ph.: 02758 272153, Cell: 09825224214.

Patel is an organic farmer. His 60 acre farm is 100% organic. He grows amla, ber and drumstick. (J)

SARDAR PATEL FARM

At Post Kathawada, Dist: Ahmedabad.

Contact: Chirag Patel, Cell: 09825293304, Email: cgpatel_13@yahoo.co.in E-mail:cgpatel_13@yahoo.co.in

The Sardar Patel Farm, admeasuring 125 acres is located on the outskirts of Ahmedabad. The entire farm is certified by Control Union (Netherlands). Shri. Patel has this to say regarding the farm:

'We have been practicing organic farming supported by the biodynamic framework, in an effort to be an intrinsic link in Healthy Chain-> Healthy Soil -> Healthy Crops -> Healthy Food -> Healthy Life. We are committed to restore the natural relationship between the environment and living things, i.e., promote biodiversity to live and let live.

'Biodynamic practices harness life giving cosmic forces and use the rythmic movements of the Sun, Moon and Earth as guidelines to plan the schedule for farming procedures. We follow the biodynamic calendar and use biodynamic preparations. This has resulted in very good improvement of soil structure, crop health and crop quality. We not only want to practice this to restore the last deteriorating environment and lack luster food, but we also want to make our farm a model to inspire all to respect mother nature. All interested in knowing more and gaining from our experience are welcome to visit the farm and learn how to create heaven on earth.

'We retail our products under the brand name "ECOVITALS." This has enabled us to access customers directly and also gives us the freedom to determine the price of our products. Our commitment to providing quality products has led us to install in-house cleaning, grading, sorting machines and Nitrogen flush packaging facilities. Beaten rice, puffed rice and spray dried fruit powders of our organically grown fruits (amla, chikoo, lemon) are some of our most popular products.

'In our effort to make available good food to all, we inspire other farmers to grow the same. We procure organic certified produce from small farmers at source, providing a better price than current market rates. We have built up a good customer base in the city. Reliance Mart and More Mega Mart (Aditya Birla Group) are some of our better known clients. We have two loading rickshaws transporting our produce (including fresh and exotic vegetables) to the city twice a week. Slowly our market base is extending to other cities of India.

'A plant nursery is part of our many activities. Our gardens are home to numerous plants from across the world, thriving and showing one and all that it is possible to create a paradise around you if you desire it.' (J)

KAMLESH MAYURBHAI PATEL (AKSHARGRAM)

'Saurabh' Punam Palace, Bh. Hotel, City Gold Theater lane, Ashram Road, Navrangpura - 380 009, District Ahmedabad, Gujarat. Ph.: 079 55611521 (R), 55219806 (O), Cell: 09898463378.

Patel started organic farming in 2003. His 20 acre farm is fully organic. He grows paddy, wheat, maize, pearl millet, green gram, horse gram, pigeon pea, sesame, castor, mango, chickoo, banana, custard apple, vegetable and fennel. (J)

JAYANTBHAI SOMABHAI PATEL

C. Somabhai & Co., 1st Floor, "Akashganga", Gujarat College Road 380 006, District Ahmedabad, Gujarat. Ph.: 079 26564508 (R), 26466815 (R), 26469694 (O), Cell: 09898597713, Email: jspsoma@yahoo.com.

Patel is an organic farmer. His 2 acre farm is wholly organic. He grows wheat, maize, pearl millet, green gram, kidney bean and vegetables. (J)

PARESHBHAI JAMNADAS PANDYA

7, Gayatri Soc., Jawahar Chawk, Maninagar Ahmedabad - 380 008, District Ahmedabad, Gujarat. Ph.: 079 25450094 (O), Cell: 09426023151.

Pandya started organic farming in 2005. His 13 acre farm is fully organic. He grows sesame, castor, amla, lemon, mosambi, vegetables and fodder. (J)

PARUL-NIMISH ZAVERI

Kanineeka Foundation, Amrit-Leela Bungalow, Opp. Nagori Hospital & Chambers Hotel, Near Gujarat College, District Ahmedabad, Gujarat. Ph.: 079 26420622, 65249799 (O), 26608245 (R), Email: abhikram@abhikram.com.

Zaveri is an organic farmer. His 8 acre farm is wholly organic. He grows paddy, wheat, pearl millet, green gram, horse gram, amla, chickoo, guava, barley, spices and vegetables.

Products: From amla to puffed rice, flattened rice flakes and herbal products. (J)

SONAJI MAVJIBHAI CHAUHAN

At Diyodar P.O. & Taluka Diyodar - 385 330, District Banaskantha, Gujarat. Ph.: 02735 244785, Cell: 09426320340.

Chauhan started organic farming in 1998. His 30 acre farm is fully organic. He grows wheat, sorghum, pearl millet, green gram, kidney bean, math, sesame, castor, fennel, cotton and fodder. (J)

AMRUTBHAI DALABHAI TATOSANIA

At Kumbhalmer, Via Chandisar, Taluka Palanpur - 385 510, District Banaskantha, Gujarat. Ph.: 02742 283510.

Tatosania started organic farming on his 3.5 acre farm in 2002. Today he is fully organic. (J)

MEGHARAJBHAI KAMRAJBHAI PATEL

At Kabirpura, P.O. Sisrana, Taluka Vadgam - 385 421, District Banaskantha, Gujarat. Ph.: 02739 288030, 297308. Cell: 09426349350.

Patel is an organic farmer. His 25 acre farm is 100% organic. He grows wheat, pearl millet, castor, groundnut, mustard and vegetables. (J)

LAXMANBHAI BHIKHABHAI CHAUHAN

At Aladar, P.O. Chaga, Taluka Bhajir - 385 320, District Banaskantha, Gujarat. Ph.: 02735 227032, Cell: 09824042383.

Chauhan is an organic farmer. Only half his 14 acre farm is organic. He grows pearl millet, green gram, math, sesame, mustard, castor, lemon, ber, mango, amla and cotton. (J)

JABBARSINH LAKHJI VAGHELA

At Valam, P.O. Valam, Taluka Diyodar - 385 330, District Banaskantha, Gujarat. Ph.: 02735 263374, Cell: 09879780532.

Vaghela is an organic farmer. His 20 acre farm is 50% organic. He grows wheat, pearl millet green gram, math, sesame, mustard, castor, fennel and cotton. (J)

SHREE SAMI GAUSHALA SEWA MANDAL

At Sami, P.O. & Taluka Sami - 384 245, District Patan, Gujarat. Ph.: 02733 244384, Cell: 09925480338.

Shree Sami Gaushala Sewa Mandal's 16 acre farm is 100% organic and grow sorghum, gram sesame, castor and cotton. (J)

SHREE ANUPAM PRIMARY GIRLS' SCHOOL

At Sami, P.O. & Taluka Sami - 384 245, District Patan, Gujarat. Ph.: 02733 244038, Cell: 09925480338.

Shree Anupam Primary Girls' School is maintaining a fully organic farm since 2002. (J)

LABHSHANKAR GIRJASHANKAR RAJGOR

At Sami, P.O. & Taluka Sami - 384 245, District Patan, Gujarat. Ph.: 02733 384245, Cell: 09925480338.

Rajgor's 40 acre farm is completely organic. He grows sorghum, wheat, sesame, castor and cotton. (J)

RAMULAL CHIMANLAL PATEL

Sarvodya Ashram-Madhi, Gramodyog Wadi, At Vijapur, P.O. & Taluka Vijapur - 382 870, District Mahesana, Gujarat. Ph.: 02763 220104.

Patel started organic farming in 1998. He grows wheat, pearl millet, castor and mustard on his 6 acre fully organic farm. (J)

PRADYUMANSINH AJITSINH ATODARIA

Nisarg Farm, At Moti Bhamti, P.O. Moti Bhamti, Taluka Vansda - 396 580, District Navsari, Gujarat. Ph.: 02630 222542 (R), 222257 (O), Cell: 09427054494.

Sudhaben with her organic paddy crop

Atodaria started organic farming in 1992 and has succeeded in converting 75% of his 25 acre farm. He grows mango, custard apple, sag and katho. (J)

SUDHABEN HARSHADBHAI PATEL

Moti Baug, Near Sarana Bridge, At Gandeve, P.O. Taluka Gandevi - 396 360, District Navsari, Gujarat. Ph.: 02634 262458.

Sudhaben started organic farming in 1987. She has a 7 acre farm on which paddy, maize, green gram, gram, chickoo and coconut are cultivated. (J)

ADIVASI SANSKAR MANDAL

Gandevi, Ajarai, Taluka Gandevi - 396 364, District Navsari, Gujarat. Ph.: 02634 262353 (O), 272531 (R), 2623515.

Contact: Bhagubhai Darji

Adivasi Sanskar Mandal started organic farming in 1990. On their 5 acre farm, they grow wheat, paddy, pulses, mango, chickoo and vegetables. (J)

K.C. MASHRUWALA

Aliporia Wadi, Somnath Road, Bilimora, Taluka Gandevi - 396 321, District Navsari, Gujarat. Ph.: 02634 284320 (R), 262400 (O), Cell: 09824125776.

Mashruwala started organic farming in 2000. His 14 acre farm is fully organic. He grows mango, chickoo, amla and aloe vera.

KARSHANBHAI RAMBHAI PATEL

At Manekpur, P.O. Gadat, Taluka Gandevi - 396 350, District Navsari, Gujarat. Ph.: 02634 266804.

Patel started organic farming in 2004. On his 10 acre farm he grows mango and chickoo. (J)

THAKORBHAI JEEVANJI NAYAK

Tak Faliyu, At Gandevi, P.O. & Taluka Gandevi - 396 360, District Navsari, Gujarat. Ph.: 02634 262785.

Nayak started organic farming in 2003. His one acre farm grows organic chickoo. (J)

VIJAYKUMAR JASHWANTRAY DESAI

Opp. Post office, Parsi wad, At Gandevi, P.O. & Taluka Gandevi 396 360, District Navsari, Gujarat. Ph.: 02634 262234, Cell: 09913639380.

Desai started organic farming in 2002. Only half of his 5 acre farm is organic. He grows mango and chickoo. (J)

RAJESHKUMAR DHIRUBHAI DESAI

Kapa Talav, Vachlu Faliyu, At Amalsad, P.O. Amalsad, Taluka Gandevi - 396 310, District Navsari, Gujarat. Ph.: 02634 272135 (R), 272779 (O), Cell: 09427340818.

Desai is an organic farmer. He grows mango and chickoo on 2.6 acres. (J)

MAHESHBHAI BHANABHAI PATEL

At Nava Talav, P.O. Khadsuya, Taluka Navsari - 396 433, District Navsari, Gujarat. Ph.: 02637 225636.

Patel started organic farming in 2004. Only half of his 2 acre farm is organic. He grows mango and vegetables. (J)

RAKESHBHAI HARISHBHAI PATEL

At Nava Talav, P.O. Khadsuya, Taluka & District Navsari - 396 433, Gujarat. Ph.: 02637 225926, Cell: 09824941910.

Patel started organic farming in 2004. Only half of his 4 acre farm is organic. He grows mango, chickoo and sugarcane. (J)

BHAVESHKUMAR BALUBHAI PATEL

At Nava Talav, P.O. Khadsuya, Taluka & District Navsari - 396 433, Gujarat. Ph.: 02637 225341, Cell: 09824159378.

Patel started organic farming in 2003. His 2 acre farm is fully organic. He grows mango, chickoo and flowers. (J)

GHANDHIGAR

At Kachholi, Taluka Gandevi - 396 370, District Navsari, Gujarat. Ph.: 02634 270759 (R), 272259 (O).

Ghandigar started organic farming in 1990. The 30 acre farm grows mango, chickoo and fodder. (J)

MONGHABHAI BHIKHUBHAI NAYAK

At Vegam, Taluka Gandevi - 396 350, District Navsari, Gujarat. Ph.: 02634 266315.

Nayak started organic farming in 2001. His 6 acre farm grows mango and chickoo. (J)

MAGANBHAI RANCHHODJI PATEL

At Kalvach, P.O. Kalvach, Taluka Gandevi - 396 409, District Navsari, Gujarat. Ph.: 02634 262524.

Patel started organic farming in 1993. He grows mangoes on his 5 acre farm. (J)

GOVALJI KHANDUBHAI

At Kalvach, P.O. Kalvach, Taluka Gandevi - 396 409, District Navsari, Gujarat.

Khandubhai started organic farming in 1995. On his 5 acre farm he grows organic mango and chickoo. (J)

DAHYABHAI KHANDUBHAI PATEL

At Kalvach, P.O. Kalvach, Taluka Gandevi - 396 409, District Navsari, Gujarat.

Patel started organic farming in 1996. His 5 acre farm is fullly organic. He grows mango and chickoo. (J)

CHHOTUBHAI RANCHHODJI PATEL

At Kalvach, P.O. Kalvach, Taluka Gandevi - 396 409, District Navsari, Gujarat.

Patel started organic farming in 1993. His 5 acre farm is 100% organic. He grows mango and chickoo. (J)

GANGABEN PATEL

At Kalvach, P.O. Kalvach, Taluka Gandevi - 396 409, District Navsari, Gujarat.

Patel started organic farming in 2000. He grows mangoes on his 5 acre farm. (J)

KARSHANJI KALIDAS PATEL

Above Bank of Baroda, Gouharbaug, At Bilimora, P.O. Bilimora, Taluka Gandevi - 396 329, District Navsari, Gujarat. Ph.: 02634 284056.

Patel started organic farming in 2001. He grows mangoes on his 1.5 acre farm. (J)

MAHENDRAKUMAR DHIRUBHAI NAYAK

At Samrawadi, P.O. Gandevi, Taluka Gandevi - 396 360, District Navsari, Gujarat. Ph.: 02634 263547.

Nayak started organic farming in 1990. He grows mango and chickoo on his 5 acre plot. (J)

HITESHKUMAR DHIRUBHAI PATEL

At Panaj, Via Khergam, P.O. Panaj, Taluka Chikli - 396 040, District Navsari, Gujarat. Ph.: 02634 220782.

Patel started organic farming in 1999. He grows mangoes on his 20 acre farm. (J)

KIRANBHAI KHANDUBHAI NAYAK

At Siripurad, Via Amalsad, P.O. Lunawada, Taluka Gandevi - 396 310, District Navsari, Gujarat. Ph.: 02634 272202.

Nayak started organic farming in 2003. His 1.5 acre farm is 100% organic. He grows mango and chickoo. (J)

RAMESHBHAI DHIRUBHAI NAYAK

At Khakhwada, Via Gadat, P.O. Khakhwada, Taluka Gandevi - 396 350, District Navsari, Gujarat. Ph.: 02634 266865, Cell: 09376666865.

Nayak is an organic farmer. His 10 acre farm is fully organic. He grows paddy, mango, chickoo, sugarcane, vegetables and flowers. (J)

ROHITKUMAR MEHTA

Laljibhavan, Desai Faliyu, Vasna, Taluka Gandevi, District Navsari, Gujarat. Ph.: 02634 272204 (O), 02637 272088 (R), Cell: 09898877428.

Mehta started organic farming in 1999. His 10 acre farm is 100% organic. He grows mango, chickoo, onion and aloe vera. (J)

HEMRAJBHAI JERAMBHAI VEGAD

At Vadla, Taluka Upleta - 360 490, District Rajkot, Gujarat.

Vegad started organic farming in 1998. On his 4.5 acre farm he grows pearl millet, kidney bean, pigeon pea, adad and black sesame. (J)

ARJANBHAI LIMBABHAI RAMANI

Gayatri Nagar, At Atkot - 360 040, District Rajkot, Gujarat. Ph.: 02821 288759, Cell: 09426961132.

Ramani started organic farming in 2003. His 18 acre farm is 100% organic. He grows castor. (J)

VELJIBHAI DESAI

92-Samarth Tower, Akshar Marg, Taluka & District Rajkot - 360 001, Gujarat. Ph.: 0281 2431086 (R) 2480166 (O), Cell: 09227606570, Fax: 2467552, Email: energy@tinytechindia.com.

Desai started organic farming in 1995. His 16 acre farm is fully organic and grows wheat, horse gram, groundnut and mango. (J)

SHITAL LOPA

Jasani T. B. Hospital, At Kothariya, Taluka & District Rajkot - 360 002, Gujarat. Ph.: 0281 2479406, Cell: 09428201884.

Lopa is an organic farmer. His 2.5 acre farm is 100% organic. He grows lemon, custard apple, amla, guava, vegetables and fodder. (J)

MANSUKHBHAI SUVAGIA

Jal Kranti Trust, 15, Anmol Apartment, 3-Vania Wadi, District Rajkot - 360 002, Gujarat. Ph.: 0281 2373995, Cell: 09426251301

Mansukhbai Suvagia is an ardent campaigner for the promotion of Gir cows. (J)

VALLABHBHAI N. BUTANI

At Sonvadia, Taluka Jamjodhpur, District Jamnagar, Gujarat. Ph.: 02898 272272.

Bhutani started organic farming in 2002. 50% of his 5 acre farm is organic. He grows wheat and vegetables. (J)

KARAMSINH CHHAGANBHAI JAVIA

At Sonvadia, Taluka Jamjodhpur, District Jamnagar, Gujarat. Ph.: 02898 272272.

Javia started organic farming in 1994. He grows groundnut on his 4 acre plot. (J)

VALLABHDAS M. PANCHANI

Khedut Hat, Main Bazar, At Dhasa Junction, P.O. Dhasa - 364 740, District Bhavnagar, Gujarat. Ph.: 02847 233195, Cell: 09426233945.

Panchani started organic farming in 1998. His 3.6 acre farm is 100% organic. He grows wheat, cotton, groundnut, sesame, methi, dhana and rai. (J)

JAYANTIBHAI NATWARLAL JOSHI

Pandurangam, Plot no. 33/34, Satya Sadan Soc., Near Ganeshji Temple, Taluka Mahuvabandar - 364 290, District Bhavnagar, Gujarat. Ph.: 02844 224547, 226547, Cell: 09824206547, 09824106547.

Joshi started organic farming in 2001. His 3.2 acre farm is 100% organic. He grows mango, chickoo, amla, lemon and kariyatu. (J)

LABHUBHAI B. GHORI

Gangeshwar Mahadev Road, Near Wadi, At Bhandaria, P.O. Bhandaria, Taluka & District Bhavnagar - 364 050, Gujarat. Cell: 09824869370.

Ghori started organic farming in 2005. His 4.8 acre farm is 100% organic. He grows groundnut, custard apple, lemon and vegetable. (J)

LALLUBHAI BHAWANBHAI PATEL

(Gram Dakshinamurti), At Manar, Taluka Talaja - 364 150, District Bhavnagar, Gujarat. Cell: 09427232953.

Patel is an organic farmer. Only half of his 10 acre farm is organic. He grows wheat, pearl millet, groundnut, coconut and cotton. (J)

DR. JIVRAJBHAI SUTARIA

Gautambaug, At Sagwadi, Taluka Shihor - 364 240, District Bhavnagar, Gujarat.

Sutaria started organic farming in 2002. Half of his 20 acre farm is organic on which he grows ber. (J)

MAHESHBHAI-MEHULBHAI BHATT

Gram Dakshina Murti, At & P.O. Amla, Taluka Shihor - 364 210, District Bhavnagar, Gujarat. Ph.: 02846 244607, Cell: 09427233464.

The Bhatts are organic farmers. Their 6 acre farm is 100% organic. They grow wheat, pearl millet, green gram, sesame, lemon, guava, custard apple, banana, vegetables and fodder. (J)

KIRITBHAI PREMJIBHAI ASODARIA

At Monvel, Via Bhander, Taluka Dhari - 364 656, District Amreli, Gujarat. Ph.: 02797 237825, Cell: 09925676022.

Asodaria is an organic farmer. His 12 acre farm is fully organic. He grows wheat and spices. (J)

BHUPAT MANJI PARVADIA

At Bhurakhia, Via Damnagar, Taluka Lathi - 365 220, District Amreli, Gujarat. Ph.: 02793 222653, Cell: 09428468325.

Parvadia is an organic farmer. His 10 acre farm is fully organic. He grows wheat, pearl millet, gram, ground nut, sesame and cotton. (J)

JATAN

Vinoba Ashram, Gotri, Vadodara 390 021, Gujarat. Ph.: 0265 2371429, Cell: 09427054132, Email:jatantrust@gmail.com

'JATAN' meaning 'to nurture' and Kapil Shah are synonymous in Gujarat. Son of a dedicated Sarvodaya leader Jagdishbhai Shah, Kapil Shah is the founder director of Jatan. Kapil, a post graduate in agriculture with specialication in plant breeding and genetics gave up his lectureship after a 5 year stint at Grambharati, a rural agriculture institute in Amrapur, near Gandhinagar to dedicate his full time to the organic farming movement in Gujarat.

In 1985, the Human Technology Forum had organised a seminar on organic farming. It was decided at this seminar that a booklet on the subject be published. So Mahendra Bhatt and Kapil Shah produced a booklet on organic farming in Gujarati and called it Sajiv Kheti. 'Sajiv' in Gujarati means 'living'. The term was deliberately chosen because they felt that 'organic farming' was a term coined in the west and not everything that it stood for was acceptable in the philosophy of Sajiv Kheti. And, Jatan was born in 1986.

Kapil Shah, the prime mover of organic farming today in Gujarat, from farm certification to green shops and anti-GM campaigns. May he (and his supportive family) live long!

Jatan, based at the Vinobha Ashram at Gotri, Vadodara is a nature cure centre. A small one and a half acre plot on which trees, vegetables, fruits and fodder are grown. This has been set aside to farm along Sajiv Kheti principles and serves as a demonstration plot as well. Rain water is harvested and stored in the farm pond. This demonstrates an important technology in practice, especially for a region that has on average only 22 days of rain in a year. In Gujarat, 81% of villages have no local source of water and are increasingly forced to use ground water reserves from wells that are over 8,000 years old. Promoting rainwater harvesting techniques is a practical technology that can come in very handy for the farmers of these areas. Mixed cropping in small plots is another feature on the Sajiv Kheti farm at Vinobha Ashram.

Sajiv Kheti's philosophy based on Gandhian principles emphasizes simplicity, self-respect and high regard for manual skills. Clarifies Kapilbhai, 'Jatan believes that organic farming if it is merely business oriented does not necessarily mean Sajiv Kheti. To fit into its definition, farming must be followed as a divine faith where in a farmer after providing for his domestic consumption, sells the surplus in the market. Given this perspective, Sajiv Kheti is a lifestyle statement of a philosophy propounding ecologically sustainable practices.'

Although Jatan has been working for over two decades, Kapil says that it is only in the past 10 years that well informed farmers, activists and voluntary organization have taken up promoting non-chemical agriculture with a missionary zeal. In Gujarat today, it is spreading akin to a mass movement. This inspite of the Government's reluctance to pitch in whole heartedly. The reason for the present spurt is the realisation on the part of the farmers themselves that green revolution techniques have failed to deliver.

Jatan's Approach

Kapilbhai says, 'In our experience, we have found that people don't believe you or accept your suggestions unless they realize the problem themselves. It is only when they face blocks and difficulties that our work starts. Considering this reality, we have remained available to people when they come searching for alternatives.' Jatan prefers to remain small, shunning the idea of putting up massive institutional structures. Adds Kapilbhai: 'Ours is a small and personal initiative in search of work satisfaction through contributing to sustainability. Well wishers and friends support the families of some of the core group members of Jatan. Over time the trust activities have become self supportive.'

Jatan's Activities at a Glance:

Development and publication of educational material

Jatan has published numerous titles on organic farming and organic food including exhibition posters in Hindi, English and Marathi. An audio cassette with songs on organic farming and video documentaries on successful organic farmers as well as a monthly newsletter by the same name (Jatan).

Resource Centre

Jatan has the best resource library stocking audio visual material, photograph collection and over 1,000 books and reference materials on organic farming and environment. It is the best resource centre for organic farming in Gujarat.

Farmer meetings

For the past decade, Jatan has been organising biannual state level farmer meetings. The event goes by the name Sajiv Kheti and almost every farmer in Gujarat is aware of this biannual gathering. Dozens of voluntary organizations pitch in to make it a memorable event for farmers. Farmers can register for the event with 5 kgs of any grain.

Food festivals

Food festivals serving popular dishes made from organic produce are organized to give farmers an opportunity to show that organic produce is much more appealing to the palate than chemically grown foods. This has brought customers in direct contact with organic foods. It has served as an opportunity for direct marketing. Book exhibitions on organic farming, related films and cultural events are part of these food festivals.

Farm visits

Jatan organizes regular farm visits for interested farmers to grassroots organizations and other farms within and outside the state.

Organic shop

Jatan runs an organic shop where 80-90% of the retail price goes directly to the farmer. The shop also doubles as an educative space for consumers on sustainable practices and clean food (see organic food section for details).

Consumer tours

Jatan organizes field trips for consumers wanting to educate themselves on organic practices to organic farms and post production processing units.

Campaign opposing GM crops

Jatan has being consistently articulating its stiff opposition to GM and GMOs at all regional and national forums. It organizes campaigns against GM on the one hand and farmer/public meetings on the other to raise awareness on the hazards of permitting the entry of GM into the Indian agricultural scene.

Jatan's certification system

Jatan has developed its own unique certification process. This process is designed to evaluate and promote a low carbon foot-print. The process uses over 70 criteria to evaluate the farmer's social, ecological commitment within the farming process. Evaluations are displayed on a percentage basis. Jatan's certification process also doubles as an educational process. It is an opportunity for interaction amongst farmers, consumers and traders.

Jatan advocates the system of self certification by the organic farmer to develop confidence and respectability beginning with his own self. Jatan believes that an alternative marketing strategy that is farmer friendly, eco-friendly, consumer friendly and at the same time honest and transparent needs to be created and operationalised. Above all, it should be an open system and as local as possible.

Jatan today

Jatan today is a leading coordination body between consumers, farmers, government, academics, universities; playing an advocacy role in establishing a platform for coordinating the organic farming movement at the national level. Jatan is the state secretariat of OFAI for Gujarat and Kapilbhai is a member of the National Steering Committee as well as the Managing Committee of OFAI.

CENTRE FOR ENVIRONMENT EDUCATION

Thaltej Tekra, Ahmedabad – 380 054, Gujarat. Ph.: 079 26844748, Fax: 079 26858010

Web: www.ceeindia.org

Contact: Chandra Shekhar, Programme Officer, Rural Programme Group. Email:chandra.shekhar@ceeindia.org

Gram Nidhi is an organic farming outreach programme of the Centre of Environment Education, Ahmedabad. Under this programme, farmers were introduced to organic farming. Of them, 65 farmers took it up in 2004-2005. By 2008 the number of farmers who had adopted organic farming rose to 200. Of these, 50 farmers are completely organic, while the others are still in the process of conversion. Local farmers have been trained in all practices. Local seeds that require less water are preferred by these farmers. They have learnt quick composting techniques. Biopesticides, trichoderma, beuberia protect fungal and viral attacks. Castor cake is used for soil fertility and fungal control. Marigold on crop periphery serves as a trap crop for insects, cow urine and scum layer of butter milk is used for preparing good quality compost. Use of vermicompost, jeev amrit, coconut water etc. are part of organic processes on these farms.

AGA KHAN RURAL SUPPORT PROGRAMME (I), SALYA

Near Rajsobhag Ashram, National Highway No. 8, Sayla
Surendranagar, Gujarat, Cell: 09925239321

Contact: Pankaj Dev, Area Manager

Aga Khan Rural Support Programme (India) Sayla, is an outreach progamme of the Aga Khan Trust. They started the organic farming programme in 2003 as a response to the failure of chemical farming in the drought prone areas of Surendranagar district in Gujarat. The farmers have been trained in all organic techniques and technical assistance has been provided through field facilitators. After a three year conversion period the farms are assisted with certification by any of the APEDA approved agency. The farmers grow certified cotton, bajri, sesame, cumin and coriander. 91 farms have export certification, 137 have reached the certification stage and about 500 farms are under conversion. A manch/group, Gujarat Sustainable Organic Farming Association has been created to promote fair trade practices in cotton.

The major kharif crops are cotton, ground nut, bajri, sesamum, castor, green gram, muth, kalthi etc. In the rabi season cumin and wheat are cultivated. The farmers have established a marketing linkage with one Mumbai based company. It paid the farmers a premium of 10% for the organic produce. The group is now exploring avenues for long term marketing linkages.

(Source: Mahesh Patel, Chotila. Cell: 09427156716)

SOCIETY FOR RESEARCH AND INITIATIVES FOR SUSTAINABLE TECHNOLOGIES-SRISTI

AES Boys Hostel Campus,Near Gujarat University Library & SBI Bank,Navarangpura, Ahmedabad- 380 009 Phone: 079-27913293/27912792,E-mail: info@sristi.org

Web: http://www.sristi.org

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SRISTI is an NGO engaged in education, research, policy, documentation etc. relating to farming. It produces a newsletter on people's innovations called The Honey Bee. It is also involved in documenting experiences in organic agriculture. It has a large database on indigenous innovations by farmers. SRISTI also networks global research on the subject.

SRISTI, which means creation, was born in 1993, essentially to support the activities of the Honey Bee Network. Its main objective is to respect, recognize and reward creativity at the grassroots. Based in Ahmedabad, SRISTI is a registered charitable organization that is devoted to empowering the knowledge rich economically poor people by adding value to their traditional knowledge. It has helped establish many initiatives like GIAN, NIF, MVIF and AASTIIK.

It is involved in systematically documenting and disseminating information about grassroots green innovations, protecting and providing venture support to grassroots innovators. The Honey Bee newsletter is published in three languages: English, Hindi and Gujarati.

Recently SRISTI has been focusing on women's knowledge systems, value addition through a natural product laboratory, and innovations in education.

(Source: Ramesh Patel)

Going Organic Behind Prison Bars

Under the initiative and guidance of Siddharth Jaiswal, who completed his Post-Graduate Programme in Agri-Business Management from the institute in 2008, the inmates of the Sabarmati Jail at Ahmedabad, in early January 2009, took up farming organically on a ten acre plot within the premises of the prison.

They began by first learning vermicomposting followed by growing of green manure crop – Sunoy – a variety of jute. This rabi season, they have planted traditional rice varieties – Jeerasal, Pankhali, some hybrid rice and G12.

Dr. Arun K Sharma of the Rajasthan Organic Farming Association is teaching them the SRI method of cultivation.

A small medicinal garden is also being set up simultaneously on another ten acre patch.

The jail maintains 70 cattle of which some are Gir and others mixed breed. Hence there is ample cow dung and urine available for preparation of organic inputs, says Jaiswal.

Siddharth is a new discovery for OFAI. I met the young man in Ahmedabad last January in the company of another young man, Shripal Shah, who is the owner of ASAL, Ahmedabad's famous green store.

(If more such young people come up to serve organic India, we need not worry any longer about the future. It is in young and energetic hands.)

Siddarth was only keen to know how to get into promoting organic.

He is presently also attempting to motivate farmers in his home state of Bihar to adopt organic practices. He helped OFAI's north India office to organize its first meeting of organic farmers in Bihar this year. He funded all the expenses out of his own pocket. This is amazing.

Now Siddharth, along with campus buddies have set up joos@campus – an organic drink and snack outlet within his alma mater.

Inaugurated on Aug 5, 2009, joos@campus is built entirely out of bio-degradable materials like wood, bamboo, mud, cloth, and jute and recycled metal scrap.

It offers a range of organic drinks like wheat grass, ashwagandha, shatavari, bhui aamla, mocktails; besides the regular fruit juices with proven therapeutic and nourishment value. It also stocks organic fruits, vegetables, grains & pulses, cold pressed cooking oils for ready organic shopping to stock kitchens on campus.

Positioned under a sprawling neem tree, offering an informal ambience and costing kept moderate at upwards of Rs.15 for a health drink, the kiosk is set to become the favorite watering hole of the management crème de la crème of this country.

Contact Siddarth at Ph.: 079 65491333
Email: gogreenherbs@gmail.com

Western India

Maharashtra

Interview with Jayant Barve

Jayant Barve chucked up a career at the National Chemical Laboratory to become one of the most creative and innovative organic farmers in the country.

Claude Alvares: You have been doing organic farming for 20 years. Could you tell us something about your background.

Jayant Barve: I completed my M. Sc. in Physics and was working at the National Chemical Laboratory, Pune. I was also a lecturer in physics in a reputed college in Pune for five years. Then I was asked by my father to come back to my native place because we have property here and I was the only son. So I had to go back. With some research of my own, we started a unit for manufacturing textile dye intermediates. The name of the product that we were manufacturing was Para Nitro Aniline. This was by a different method. We brought this product into the market and the small factory that we erected was doing well upto 1984.

But then a crisis developed because of the new policy of the government: the import rates of the same product we made were lower than ours. So we had to unfortunately close down the factory. It was a problem for me as to what to do there. So I started with the business of marketing chemicals, pesticides and fertilizers. We had a small laboratory in our office and we used to give suggestions to the farmers as to what is to be sprayed for which disease, after testing.

In this way our business started growing very well. In Sangli district we got a name because we were the only consultants at that time (1984-1988) giving proper 'medicine' for the particular disease. We were marketing a product of NOCIL. So the business was growing very nicely. One day I was sitting in our shop and one farmer approached me and asked for a pesticide to repel the crows that were coming for the grapes in his vineyard. He told me that when the grapes are at a ripening stage, the crows were coming and damaging bunches. So I asked him when he was going to harvest the grapes. He told me that he would be packing them during the following week. I thought to myself that if he sprayed any hazardous chemicals to deal with the problem, then these would go along with the grapes to the consumers. What would be the impact of this?

This was my turning point to organic farming. Till then I had a farm of my own but was not looking after it. I decided that I should do farming myself and do only organic farming. So I met several people and started reading on organic farming. I met Dr. Bhavalkar and Jambekar in Pune and with their help we planted a grape plot of about one acre or so. We thought that we should not use chemical fertilizer. So we started with vermiculture. At that time, before planting of grapes and also after another six months – because the mind was set with laboratory and science behind it – we took the analysis of the soil and observed how nutrient and organic carbon levels of soil were increasing and so also the potash content.

Jayant Barve

After a year we came to the conclusion that this is the only way by which we should produce grapes or any farming system should follow this particular way of vermiculture. So we started manufacturing vermicompost also. The biomass was not available with us so we approached the Vita Municipal Council and started buying vegetable market wastes continuously for three years for our farm. We would convert it into vermicompost. We would bury dead dogs and dead birds. We got very good results with vermicompost. Our grapes were best in quality. At that time we were exporting grapes from our particular group – the Vita village farmers' group – and continued with it till 1994.

But at that time it struck me, the limitation for organic farming, vermiculture. What I read at that time was, if you supply organic carbon to the soil, then the worms will grow automatically. So you need not do composting or building a shed, putting water on it for surface variety of worms, but only give organic carbon to the soil. The soil will improve automatically and the microbes will develop. So with that concept I began thinking that vermiculture is not the only solution.

We thought of some concentrated organic material and collected a number of these materials – like oil cakes, phosphates and silicon oxide, bentomite and rock dust. At that time I read in some literature that in fact composting is not recommended in any of the ancient agricultural systems. Some of this literature came from Dr. Rahudkar from Pune and Mr. Ashok Joshi, son of Mahadev Shastri Joshi who has translated ancient agricultural litrerature series and published these. In ancient times, nobody was doing composting work. At that time they would collect the dung, keep it in some shelter, powder it and sprinkle on the farm. That gave better results because it was not composted and it provided raw food to the soil, and the soil microbes.

This concept stuck in my mind and I thought of giving raw food to the soil. We have to give organic carbon. If we compost it in some pit, then all the degradation will happen in that pit. Microbes in the soil will not get food. So we thought of putting direct organic microbes in the soil. So we mixed all organic carban materials together and when we started mixing together we got good results. Again we had to do all lab tests continuously for two years.

Then my son Jaydev also completed his microbiology B.Sc. We started a unit for making organic manure at my place and that unit is coming up very nicely. We have a product called Sanvardhan. We are marketing it all over India & mainly Maharashtra and exporting to some extent. Also another product called green harvest. We are marketing this in two districts only. This manure is now formulated to replace chemical fertilizers totally.

The second aspect was, that the soil was improving but we wanted to get rid of the pesticides.

In 1992, I closed down the business of chemicals and pesticides with an official function. I invited many people and I closed down the marketing business. We wanted to replace the pesticides, so I started reading the ancient books. At that time I met Dr. Nene from ICRISAT. I purchased a book called Suraphala's, *Vrukshayurveda*. Prof. Raudkar was always writing something on the herbal preparations. There was a book, *Return to the Good Earth*, a Malaysian publication and from that I started preparing some herbal preparation of our own and by 1995 our grapes were absolutely chemical-free. We got a separate market.

There was no certification. I would market it in my name and earn good income out of it. This continued upto 2000. From 2000-2003 there was a drought and we were not able to manage the grape plantation. So unfortunately I had to cut down the grape vines. But after 2003 a small dam has been built near my farm. I lost around 10 acres of land to the dam, but the rest of the 25 acres became irrigated land. All the organic literature that I read and with the preparations that we made, all the knowledge we had gathered on the farm, now enabled us to do organic farming more consistently.

We are producing many things, right from cereals, pulses and other things. We have a plantation of 900 mango plants. In situ we have done grafting of mango plants. There are chickoos, amla etc. When I started farming in 1988, in that land of 40 acres there were hardly 20-25 trees. Today in my farm there are 5000 trees of 54 varieties. This huge biodiversity I have maintained.

We are also growing a number of crops like sugarcane, ginger and turmeric. In turmeric we have a black variety which is for medicinal purpose. We are growing jowar, wheat, etc., along with beans, red gram, horse gram, etc. This year we are in contract with a company to supply them specific vegetables for export. So we are growing brinjals, tomatoes, onions, garlic, chili, etc.

So now my farm is self sufficient. We are not dependent on anybody. All preparations are made by us. The soil is not very good.

CA: What is it that you are doing on the farm which results in money going out of the farm today? Earlier you would send money out in the form of purchases of chemicals. What is going out today?

JB: Today only final product is going out, but no money is going out. Only labour cost is there. No input is being brought from the market. We are only purchasing electricity and concentrates whenever needed. It is not that we are not buying anything. Some concentrate material like oil cakes, rock dust, rock phosphate, if required, ashes. Such things have to be brought from the market. Because we have a unit, the transport comes there and we can get it to our farm. They are all from organic sources.

Today the grape farmers – if they have a one acre area – then their expenditure at the moment at the present market rate comes to about Rs.24,000-25,000 per year for pesticides alone. The fertilizer expenditure comes to about Rs.15000-20000. So they have to spend nearly Rs.55,000-60,000 for the inputs today.

But I am also looking after a farm for my friend cultivating organic grapes and there our expenditure is like this: The input is our organic manure where he spends around Rs.8000-9000 per year and around Rs.3000 to 4000 for herbal preparation. His expenditure is around Rs.14000 per year, whereas a chemical farmer has an expenditure of around Rs. 55,000 per year. The only thing is when he is cultivating organic grapes, he has to be very alert regarding weather changes.

CA: You are one of those who have come from the other side to this side (organic). Do you think you will ever cross over to the other side and use chemicals again?

JB: No, because our minds have been totally changed. Even when we go out, while eating outside food we think will it be poisonous, what pesticides are sprayed on it. Having knowledge of pesticides business for 4 years, we know each and everything about pesticides. We can give consultancy about pesticides to any farmer even now. But that we do not do, because our minds have been totally changed. Even if somebody gives us a truckload of urea or chemicals or pesticides free, we will not allow him to enter the farm because now we are enjoying fruits of organic farming.

CA: What is the message you would give to those who say we cannot grow enough food through organic farming.

JB: It is not the case. Yield in organic farming and chemical farming are the same. In fact, after 2-3 years the yield starts increasing, as in sugarcane in our vicinity. Sugarcane yield per acre is nearly 50-55 tons per acre. So the yield is fixed. Even in wheat, jowar, the yield may vary because of climatic conditions but in sugarcane it doesn't. So in my area the yield of sugarcane is nearly 55-60 tons per acre by chemical farming. In my case, it is 60-65 tons. It does not vary much. So our yield is almost the same as the chemical farmer. Besides, in contrast to chemical farming, our soil is improving every year and the water requirement is coming down, input cost is reduced.

For example, for wheat in my vicinity the farmers are required to give 8-9 irrigations per acre by flood irrigation. On our farm we are required to give five irrigations for wheat. Thus we are saving 4 irrigations; hence we are saving a lot of water, electricity and labour. So the yields are not changing. We have no burden of buying pesticides, spraying them and the anxiety that while spraying the person might fall ill, that problem is not there.

The other thing I have observed on my farm is that my cattle are in very good health. I sell one or two buffaloes and am going for cow rearing now. I do not take my buffaloes to the market but the purchaser comes to me to fix the price. Everybody says that my cattle are healthier than what they buy elsewhere.

Albert Howard has mentioned in his Agricultural Testament that the organic farmer is to be tested by the health of his farm cattle and the health of the plant. Even my labour staying on the farm has no problem. I give them only homeopathic medicine. They are also healthy. They are not required to spray poisonous chemicals. The water is good now. Everything has changed over the last 15 years.

CA: The only problem we are finding is about the other farmers. They see that you are saving money. They see that your production is also increasing and they see you do not have to purchase chemicals and fertilizers that you do not have to spray. They see it and they know that in every village everybody knows what everybody else is doing. Why is still there a mental block? What is the reason?

JB: Mental block is of two kinds. Before independence we were almost slaves and our minds are set like that. Whenever they want to consult for something, they go to a medical doctor or the shopkeeper. They will not consult a nearby man. The farmers in my area are coming to my farm, they are seeing that the things are going on in a particular way, but they are not ready to swallow what is good because they can't understand things even though we start teaching them. Their minds are not set that way.

Through promotion, canvassing and seminars we have been trying for the last 15 years but still we are not able to get that much success. I have been in that area for the past 15 years and have traveled a lot on my own expense and have been going to farmers and telling them. But I have seen that I am not able to convert two farmers per year. Hardly one farmer per year is my success after meeting 1000 farmers in a year. NCOF has got a scheme for training 1500 farmers. They have given the scheme to my organization also and we contacted 1500 farmers. We went to them in their villages in the night because farmers are free only at that time and had 3-5 meetings with them. But whenever we go, their minds are set. They ask us whether we are going to give them some subsidies. Secondly, only the women in the villages are attending these programmes. The men are not. Whenever we talk to the ladies about the hazardous pesticides, the effect on our health and the effect of the violent food, the ladies pay attention and they think of doing something about it but there are no results.

Organic Farms

ORGANIC FARM & SUSTAINABLE AGRICULTURE RESEARCH INSTITUTE

No. 484, Kaushik Vita, Taluka - khanapur, District ¬ Sangli – 415 311, Maharashtra. Phone: 02347 -272141 Cell: 09422615878, Email: jjbarve@yahoo.com

Jayant Barve's farm is 14 hectares. He has been practising sustainable agriculture since 1988. Barve has a post graduate degree in physics. After teaching in a city college for a few years, he returned to his hometown in the vicinity of which he has ancestral land. He started taking interest in farming and set up a chemical factory on a part of the land and a shop to market chemical fertilisers and pesticides. After following modern farming practices for twelve years he changed over to sustainable agriculture. He closed down the chemical factory and converted the factory building into a storeroom for vermicasts released from vermiculture production. He also closed down the shop marketing chemical fertilizers and pesticides.

Barve explains his conversion to sustainable agriculture as follows: 'Modern agriculture is based on increasing inputs, machinery and energy. All this brings about soil degradation. The farmer has to take more care for plant protection. He is consequently compelled to resort to costly and hazardous pesticides. These pesticides contaminate the water, soil and environment. The crop cultivated is thus highly poisoned. Tension free farming with good output, negligible input of money and energy, supported by enhancement in soil quality is only possible through organic farming and vermiculture practices.'

The soil on the Barve farm is mostly black cotton or stony laterite murrum, the pH condition being around 7.0. The average annual rainfall is 500 mm, the rainy season being June to September. There are six male and six female permanent full-time workers on his farm. There are three buffaloes, two cows, four bullocks and heifers and calves. Around two-thirds of the milk produced is sold in the local market, the rest being kept for home consumption. The bullocks are used for farm cultivation and bullock-cart transport. Barve does not use motorized implements or tractors on his farm.

Part of the land is for horticulture crops like grapes, banana, drumsticks, mango and amala, while the rest of the land is under seasonal crops like sorghum, millets, ground nut, chili, wheat, pulses like horse gram, pigeonpea etc. Some portion is for fodder for the cattle and forest trees like banyan, acacia. He also cultivates ginger every year. Almost all the plots are surrounded by biomass, live fence plantations like Giri Pushpa [Glyricidia maculata], Adulsa [Adathoda vasaka], bahava [Casia javanica] neem [Azadarichta indica], Karanj [Pongamia glabra] and Eranne [Jatropha curcas].

Farm waste and the dung from cattle are used for vermicompost. Irrigation is through drip or sprinkler systems. Flood irrigation is avoided every where on the farm. The vermi-culture pits are also kept moist with the help of micro sprinklers. Herbal preparations mentioned in the literature like Virkshayurveda, Krishi Parashar etc. are prepared on the farm and used as and when necessary. Cow milk, buttermilk, cow urine and dung are also used for several preparations. Biodynamic practices are also followed and BD 500 is prepared every year on the farm.

For eight years Barve researched the manufacture of a concentrated organic manure. He has successfully established a factory unit for producing the organic manure which is now marketed by his son Jaydev. The manure is sold under the brand name 'Green Harvest'. It is a concentrated organic mix of oil and de-oiled cakes, herbals like vavading, vekhand and sea weeds and bacterial cultures. The product is also treated with vrukshayurvedic preparations and BD 500. The manure starts decomposing only after the soil in which it is applied is irrigated. Application of this product rejuvenates the soil structure and texture and improves its water holding capacity. The product is quite popular among organic farmers in the area.

The Barve farm is now totally organic, having good farm output with a steady market for the farm produce. Barve self markets the farm products without difficulty, as he has some fixed customers whose numbers keep increasing. He is happy that he has succeeded in improving the original soil capital which he received from his fore fathers.

Jayant Barve is a founder-member of the Organic Farming Association of India (OFAI) and also a member of its national steering committee.

(Source: communication with OIP)

ANAND MUKUND SUBHEDAR

Village Tiwasa, Taluka Yavatmal, District Yavatmal, Maharashtra.

The Subhedar family has owned 104 hectares of land since 1850. One hundred years later, in 1950, they started using chemical inputs for the first time but they switched back to organic farming 40 years later, in 1990. The main reason why Subhedar changed over to organic farming was that the crop yield was going down after 1985 even while the amount of chemical fertilisers required and the cost of the same was steadily increasing. He read also some books about natural farming by Fukuoka and Dabholkar.

The farm is divided into four sub-farms, each being supervised by a manager. There are in addition 45 male full-time workers. They also hire on an average 120 female and 10 male labourers on a daily basis. The soil is black and medium black and the pH is between 7 and 8. The average rainfall is 1000 to 1200 mm.

A road divides the farm into two parts. On one part, they have nine wells with pumps which are connected together by an underground pipeline. On each plot there is an outlet from which they can irrigate the fields. Thirty hectares can be irrigated up to February and 10 hectares up to May. The second part of the farm can be irrigated by pumping water from the nearby river, but there is enough water only if there is a good monsoon. In this part, water is directed through an open canal.

They have 20 buffaloes, 80 cows and 60 bullocks. The cows and buffaloes are for producing milk and the bullocks are used as draught animals. The animals are also very important for the production of farmyard manure. The milk production is not high, because feeding is not optimised and the breed has not been selected from the milk output point of view. During the monsoons and in winter (upto the beginning of February) the animals can graze. For the rest of the year, they are stall-fed. The fodder is green sorghum, pigeon pea and groundnut straw, dry grass and lucerne.

The trees cultivated are oranges and sweet lime. The crops on the farm are cotton, sorghum, pigeon pea, green gram, black gram, bajra, banana, sugarcane, wheat and a variety of other grains. Before the sowing season, they plough the fields once or twice and harrow them once or twice again during the growing season. Farmyard manure is used one to three times in a year, the average being around 10 tonnes per hectare a year. Further, they enrich the soil by planting leguminous plants and by mulching organic matter.

They have two tractors, two trailers, an iron plough and traditional harrowing, ploughing and sowing implements. Since they switched over to organic farming, the tractors are used only for transport. They use the 30 pairs of bullocks for the work on the field. They have 15 electric pumps for pumping water from the wells.

Subhedar believes in attaining a natural balance between pest and predator and therefore practises mixed cropping. For example, he mixes 500 grams per hectare of sorghum with cotton to attract birds to hunt for insects in the cotton fields. Some combinations are sorghum and green gram or cotton, pigeon pea and black gram or a three crop mix of green gram, bajra and pigeon pea. The advantages of such combinations are the drawing of predators to the pests which live on one or the other plant as well as the nitrogen provided by the leguminous part of the combination. Weeds are controlled by harrowing with bullock-drawn implements and by handpicking. On an average, they have to harrow four or five times and handpick once for each crop. The cotton area has to be kept free from weeds. Women labourers handpick weeds in the cotton three to four times during the rainy season. Subhedar prefers not to resort to direct intervention even with an organic biocontroller like neem extract or cow urine but instead allows nature to make her own adjustments on the farm.

(Source: Prakruti, Mumbai)

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Subhash Sharma: My Experiments with Natural Contour Farming

A few decades ago, population pressure and shortage of food grains at home compelled us to depend heavily on food imports and foreign aid. To remedy that situation, our agricultural scientists brought about the green revolution which resulted in huge stocks of food grains, fruits and vegetables at home. This made us self-sufficient and enabled us to export food grains abroad. However, this green revolution, with its heavy emphasis on chemical fertilizers and poisonous pesticides, was not without its dangerous effects on our land, and in due course of time, our agricultural land started dying out.

Chemical fertilizers destroyed the natural balance so crucial to the soil. It resulted in the gradual decline of friendly organisms helpful to our soil. The high-yielding and sturdy seeds of various food grains, fruits and vegetables, which our forefathers had so meticulously developed over the years, started disappearing. Our food grains, fruits and water became contaminated, but the worst sufferers of this were the farmers. This kind of farming proved to be capital intensive and constantly increased the overheads on agriculture. This resulted in the destruction of the agricultural environment and a gradual decline of the farming class and the human species.

All this had a direct impact on my agriculture and hence, from the year 1994, I changed over to the techniques of natural farming. This new experience enriched my knowledge about natural farming which I called 'Gomata Sanjivak'. It consisted of recycling the stubble, instead of throwing it away, and fusing it with Gomata Sanjivak to convert it into on-the-spot organic fertilizer. This enabled me to convert 30 tons of stubble, per acre, into rich organic manure.

All it required was a desire to succeed in this kind of farming. Sound planning coupled with knowledge, hard work, a desire to earn profit and ability to harness and conserve the natural water table are other ingredients of success. The future of agriculture is full of global competition and we can succeed in it only through the techniques of natural farming. Farmers within the country as well as abroad, are committing suicide solely due to the heavy cost of agricultural implements, seeds, chemical fertilizers and pesticides. Chemical fertilizers have resulted into the gradual decline in the quality of soil. These fertilizers, while giving us a temporary high yield for a short time, created a food surplus in the market. This surplus created a local glut, hence the minimum procurement market prices of the agricultural products dwindled, to the disadvantage of the poor farmers. In addition to this, Bt cotton and terminator gene technology became watchwords for modern day agriculture. It meant heavy expenditure to the farmers. This has deprived them of their age old tilling practices and curtailed their right to choose seeds that are harmonious with human and environmental health.

Subhash Sharma with his characteristic water balancing equipment which he constructed for just a few hundred rupees.

Natural contour farming, with an emphasis on knowledge, labour and a zest to go natural, is the only remedy against the excesses of chemical farming. Natural farming eliminates all unnecessary expenditure other than labour and actually boosts the regenerative capacity of the soil, which makes it more productive over the years.

While embarking upon natural farming, I have thought very deeply about all the processes that are useful for farming. These include irrigation, soil, labour, the choice of seasonal crops and the quality of seeds, etc. Then I planned labour intensive crops based on three different time-frames of 60 to 65 days, 100 to 110 days and 180 to 200 days, each with the aim of enriching the soil. The residual biomass from the first crop of 60 to 65 days was used as covering for the next crop. This covering later decomposes into organic manure. This makes the top soil moist and makes it less dependant on irrigation.

Thus, I repaid more than what I received from the soil and enriched it further. While doing this, I considered water as the most important resource that could be brought to the soil without much expenditure. I saw to it that rainwater is retained in the soil and does not flow away into the nearby nulla. Our village witnessed 8 cm rainfall in just one hour on 14 June 2003. I could hold 95% of this rainwater in my soil through contouring which allowed a substantial quantity of water to percolate into the soil.

I also planted trees which could conserve soil and environment and which could provide shelter and roosting places for a variety of birds. While doing all this, I reciprocated the labour of my farm workers with due honour and dignity, thereby making them favourably inclined to the idea of natural farming.

I have designed simple piece of equipment for contour mapping. This simple device for quick contour mapping is now ready. If made of teak wood, this will cost about Rs.400. If sowing is done using contour mapping with the help of this device, it can increase vegetable production by 2 to 3 times and yield of food grains, cereals and pulses by 1.5 to 2 times. I have experimented and observed these differences in year 1997-98.

This device is made of two wooden planks or blocks of 6 inches x 6 inches with a thickness of 2 inches each. A 6 feet long wooden pole, with a thickness of two inches by half inch, is fixed vertically into the centre of each block by making a slot in the block and hammering the pole into it. This joint is then fortified with the help of iron strips and nails. Now a measuring tape is fixed on to one side of each vertical wooden pole, starting one foot away from the tip, from above downwards, with the help of small, evenly placed nails. Then a 50 feet long 'slab level pipe' is used to join these two poles in such a way that the vertical limbs of the level pipe are fixed to the vertical wooden poles at either end. Electrical clips, hammered into the wooden poles at 45 cm intervals alongside the measuring tape, can be used to fix the level pipe securely to the device.

With the help of this device one can increase the vegetable yield by two to three times and the yield of food grains, cereals and pulses by fifteen to twenty times. I have actually seen this happen in just 17 to 18 years of my experience.

Although I had encountered great difficulties in the first three years of this experience, those difficulties were solely due to my inexperience in technical matters. For example, I did not know how to level my field correctly; as a result, some part would be more inclined than the remaining field. Yet I did not lose heart and continued with zeal, using the contouring device. I could eliminate all the errors after three years. Now I can say that I have mastered this technique and can achieve an accurate level in my 26 acres of farmland. I require anything between one to 15 hours per acre to make accurate contours, thanks to my initial faltering.

However, the technique could be taught to a newcomer in just one hour. The apprentice could be taught how to draw marking lines and avoid all the pitfalls while doing so. The technique requires leaving two to three centimeters of slope for specific irrigation needs of different kinds of crops.

I have also studied the techniques of conserving water. Earlier, I used to have 200 to 300 feet long bunds to hold water in the field. But after some serious thinking about these long bunds, I came to the conclusion that if I divide these 300 feet into smaller chunks of 50 feet each and actually see the percolation rate of water, then it is obvious that the rate is higher at the beginning of each chunk and then it decreases progressively along its length. This means that, in the first 150 feet, more water percolates than necessary. This excess of water could be conserved, I thought. To save water, I decided to have irrigation channels of about 40 to 50 feet long instead of 300 feet. I could irrigate each chunk in three hours. Earlier, this required six hours, which means a straight saving of three hours and that much quantity of water.

Subhash Sharma's farm is also a thing of beauty.

Later on, I discovered one more method of conserving water. Earlier, for irrigation I used to break open the vents of the main canals one by one. It involves running for three hundred feet to break open the other vent, during which time water from the main canal would flood the field and damage the boundary walls. The quantum of water that was wasted in the process exceeded hundreds of gallons.

I thought of doing something to avoid this wastage and started opening the vents not one by one, but every other one on my way to the end of the main irrigation canal, and then breaking the remaining alternate vents on my way back. This ensured release of water from the main canals to the fields and saved the extra energy of a man running about to release the water and actually saved it. If you add up this small saving of one year, you could save thousands of liters of water every year by this simple method.

In addition to contour mapping, I started working on another experiment to conserve cent percent of the rain water in my fields. A step towards this was to dig a small tank of 20 feet long x 10 feet wide x 10 feet deep per hectare. Calculations indicate that this approach accompanied by contour mapping could save enough water required for irrigation throughout the year thus creating self-suffieciency for water. I prepared some data to establish these calculations in year 2003-04 as follows:

I cm rain-water\hectare is equivalent to 1 lakh litres of water. The year when I prepared this data, there was 100 cm rain recorded in my area. This means rainwater poured one crore litres of water per hectare of my land. My farm is 12 hectares. Thus, there was 12 crore litres of rain water in my farm. Of this water 30% was lost due to natural evaporation. The remaining 70% (i.e., 8.4 crore litres of water) gwasconverted into the underground water table. This is the amount of water that I saved. Now when it comes to usage, I have 2 electric pumps of 5 HP each. A 5 HP pump pulls out 36,000 litres of water per hour. I analysed the annual usage of these pumps in my fields and observed that each pump is used for 800 hours per year. The results are 800 * 36000=28800000 litres of water being used from each pump. So the total underground water used in my field amounts to 2 * 28800000 = 57600000 litres of water. So if we look at the numbers, I saved 8.4 crore litres of water and only used 5.76 crore litres of water. This shows that after fulfilling my water requirements I was able to save an extra 2.64 crore litres of water. This saved water as well as as fertile land from flowing away with rain water.

I started my agriculture vocation in 1975 when I sowed jowar, cotton, tur dal, moong dal, wheat, gram and vegetable by traditional methods. I started using chemical fertilizers and pesticides on my farm sin 1978 and reaped its benefits in terms of 12-14 quintals of cotton, 18-20 quintals of jowar, 10 quintals of tur dal, 15-16 quintals of wheat and 10 quintals of gram per acre. I even harvested upto 200 quintals of vegetables per acre and continued to reap such high yield until 1986. As a result, the state of Maharashtra conferred upon me the title, 'Dedicated Farmer' in the year 1983. I continued to get high yields till 1987. But thereafter the yield began to show a steady decline.

Between the years 1990 and 1994, my farm showed a marked decrease in the yield of every kind. This was quite obvious in terms of cotton, jowar, wheat, grams, vegetables, tomatoes, coriander, chili, cabbages and pumpkins. While the yield fell sharply, the production cost of the same had risen steeply. The question of profits from the farm did not arise. The shortfall in vegetable produce was substantial and the total yield per acre did not go beyond 5 to 20 quintals. The farmland had died due to chemical fertilizers and poisonous insecticide sprays had killed every organism, including the friendly ones in the soil.

It is around this time that some farmers of our area started thinking seriously about natural farming and I too became a part of this discussion group. I began my experiments with natural farming in 1994 but this did not mean that I abandoned the use of chemical fertilizers completely; I decided to phase them out gradually over a number of farming seasons. In 1994, I started a comparative exercise and used four bags of chemical fertilizers per acre in some plots of land and one bag of the same in the other pieces of land. I realized that the yield from both was equal in quantity. This meant that using four bags of chemical fertilizer was a waste of money. But when the same weed is converted into organic manure, it's value becomes rupees 50. This is an invisible profit....

Benefited by this observation, I decided to use just one bag of chemical fertilizer on some pieces of land and no chemical fertilizers at all on the remaining plots. I used insecticide sprays wherever I found it necessary. At the end of the season, however, I realized that the yield from the plot of land where insecticides were sprinkled had actually declined, whereas the yield from the plot of land where no insecticides were used, had actually doubled. So I continued to use chemical fertilizers and insecticides in one half of my land and no chemical fertilizers in another half. But I could not resist the temptation of using insecticide spray in the other half. I used a small amount of insecticide spray especially when I could see a healthy crop being attacked by pests and insects.

In the year 2000 I could conclude that the yield from the natural plot was much higher than the one where chemical fertilizers and insecticides were used. The cost of production in the artificially grown field was much higher than the cost of production in naturally grown fields. The only cost in the latter was that of labour. The incidence of pests too was minimal in the natural plot. This was quite noticeable in terms of some specific crops like beans, papaya and pumpkins. These crops showed 100% decline in yellow mosaic and other viruses. These pests had virtually stalled the production of the same yield during the year 1990-1994. I continued this comparative experiment of sowing in two different fields till the year 2000.

In the year 2000, however, a simple observation in the field brought to my notice a profound phenomenon. The plot of land that was being tilled naturally had two acres of cauliflower crop. The sudden change in the climate brought about an insect attack and to quell this I used insecticide spray. Close observation of the plantation the next day showed complete obliteration of the insects and along with it, lakhs of field ants were found dead near the ant hill. This unintended killing of the ants ran counter to the philosophy of natural farming. I had become captive to the popular dictum, 'spray insecticides when you see a good crop' which diminished the benefits of natural farming.

The death of the ants was not just an emotional issue for me. The ants' death would have been beneficial to the soil, had they met a natural end. Their millions of bodies, rich in proteins and other qualitative ingredients, would have enriched my soil. But the unnatural death of the ants deprived my soil of this vital manure. This must be happening, I thought, with many other friendly organisms of the soil. I decided never to use insecticides again within my farm, and this is how I changed over completely to natural farming since the year 2000. I called off my experiments with partial chemical farming since that year.

My farm yield has increased steadily since the year 2001 and I harvested a record crop in the year 2002. Today, farmers and experts who visit my farm are pleasantly surprised to see the results of my natural farming. My farm affirms knowledge, hard work and planning, the three mottoes of an authentic farmer. Let me tell you that unless you follow this trio of a principle, you cannot increase the yield in your farm.

I have also minutely observed the transformation that came over slowly to my farm after I changed over to the natural way. My experiments with natural farming began in 1994 and it is at this time, that I had decided to recycle weeds and grass in my farm, be it natural or chemical, and not to throw it on the bunds. I did not pick the weeds and grass but let them remain on the land and reduced my expenditure on their usual disposal. The weeds get decomposed over a period of time into organically rich manure and can be used as such for the next crop.

My vegetable yield shot up from 10 to 25 quintals per acre in the year 1995 and my overhead expenditures decreased progressively. Although my farm yields showed a constant increase and I could take up to 70 quintals of vegetables, I was not happy enough till the year 2000, even though my yield was 200 quintals per acre. I got the satisfaction of reaping full benefits of natural farming from the year 2002-2003, when my vegetable yield touched 300 quintals per acre. I had an abundant and healthy kharif crop in 2003-2004 and my faith in natural farming was strengthened manifold. I know that my yield can increase further if I continue to reinvent my method. After deep thinking, I have adapted myself to contour farming with all its natural resources and attendant benefits. I am now a full fledged organic farmer.

My chemical farming won me the 'Dedicated Farmer' title way back in 1983. My total abdication of chemical farming in favour of natural farming won me yet another laurel, 'The Pride of Agriculture' title in the year 2002, also bestowed by the Government of Maharashtra. While practising these divergent methods, the chief source of my inspiration was: 'hard work, knowledge and planning!' the motto of a true farmer, popularized by the state sponsored agricultural magazine called 'Baliraja'.

Before I embarked upon organic farming, I decided to meet and interact with some other organic farmers of the area. I visited Shri Anandraoji Subhedar, an organic farmer in my vicinity. I saw a heap of fresh cow dung lying near the main irrigation canal and I saw a labourer mixing fresh dung with his own hands in the running water of the canal, which reached the standing crop in the field. I enquired about the utility of this practice from my host. He explained that when cow dung was mixed with irrigation water, it became virtually a life giving (Sanjivak) manure for the crop. This, according to him, increased the growth of organisms necessary for the crop. I studied this method for some time and then decided to implement it in my farm.

When I started using this Sanjivak for my crop, I had about 20 cattle on my farm. I developed a disposal method for their dung and urine which is as follows: I constructed cement tanks of 200 liters capacity in every two acres of farm land and poured 60 kilos of dung and 5 liters of cattle urine in each of these tanks. I added 300 grams of jaggery in each tank and filled it with water up to its brink to make it into liquid organic manure. I allowed this liquid to set for the next six days and then gave a tank full of this manure to each acre of land. I used this manure, Gomata Sanjivak, for a crop which had a cycle of 100 to 120 days.

The dose of this organic manure was five tanks per acre per cropping season. I developed a distribution system for this manure by asking a woman labourer to take a 15 litre bucket and a one litre tin. I asked her to fill the 15 litre bucket with Gomata Sanjivak manure and asked her to pour it in the main irrigation canal through the one litre tin. I have started using this organic manure since the year 1995 to this day, and I can say that this has helped me greatly to increase the farm yield. The manure, as I have already told, encourages the growth of necessary organisms and helpful parasites like ants, in the soil. If you continue to add this liquid manure to your soil for every cycle of crop, you end up by adding about one ton of Gomata Sanjivak to your soil every year.

It should be remembered that the weeds and grass from the field should be left untouched in the field. I was taking three cycles of crops in a year and so, if you account for their stubble and grass according to the specific crop, then I can say that between 22 to 40 tonnes of this stubble are being added in the form of organic manure every year. The stubble is converted into an excellent organic manure with the help of Gomata Sanjivak. This has a regenerative capacity for the soil. This organic manure underlines the importance of cattle in farming. I had arrived at the quantum of residual stubble by the following method:

My first crop was that of pumpkins. I sowed each plant at a distance of 12 x 4 feet. This makes 770 plants per acre. A fresh pumpkin plant without a single fruit can weigh about 6 kilos, this makes 4620 kilos, the total weight of plants per acre. Added to this weight is the weight of stubble which is about 150 kilos per 1000 sq. feet. The total weight of stubble comes to 6534 kilos per acre. So, the pumpkin crop gave me stubble of 11154 kilos. This entire residue was recycled as organic manure for the next crop, which was of cauliflowers.

I planted cauliflower plants at a distance of 45 cm x 30 cm and with this density, 29040 plants per acre were planted with an average weight of each plant coming to 300 grams. The total weight of the plants, per acre, comes to 8712 kilos. Add to this weight, the weight of stubble and grass which comes to 108 kilos per 1000 sq feet. The total weight of stubble comes to 13416 kilos. This organic residue was added to the soil for the third crop which was of spring onions. I weighed the weeds and stubble of this crop which came to 204 kilos per 1000 sq feet. With this ratio, I could mix organic waste of about 8686 kilos per acre with the following formula: 11,154 + 13416 + 8686 = 33256 kilos of organic manure. This too was added to the land for the third time in the same year!

I must say that the number of friendly parasites was greatly increased due to the complete withdrawal of insecticides. This has enabled the ant population in my farm to grow by crores. This qualitative addition of ants to the soil has the following three advantages:

1) Ants act as predators upon the larvae and eggs of insects thereby acting as effective insecticidal agents;

2) Ants continue to bore in the soil which has something like a tilling effect for it. The air below the soil surface circulates well in such a porous soil;

3) When the ants die, they make the soil rich with their protein rich bodies.

Weeding occupies a special place in organic farming and if you calculate the labour cost for weeding, it comes to 20 to 25 rupees per 1000 sq feet. But when the same weed is converted into organic manure, it could fetch rupees 50 per kilo according to market rates. This is an invisible profit which, when merged with soil, helps the next crop grow even better. This method gives more than what it receives from the soil and hence proves to be very beneficial to the soil. With every crop, you get green stubble cover converted into rich organic matter.

Suppose you take a mixed crop of tur, mung and soyabeans, then the mung crop has a 60 days' cycle, the soyabean, 100 to 110 days, and tur between 180 to 200 days. The distance between each of these three plants would be between 7 to 10 cm considering their periodic cycle, the weeds of the one could be used as manure for the other, thereby making the overall soil richer. The weeds of mung can be used as a cover and manure for tur. This will help the soil retain its moisture and will prove a special boon in an arid and dry climate. Most vegetable crops can be taken with enhanced productivity by employing this method.

Punctuality is the essence of organic farming. One has to maintain the rhythm of each crop to keep away the diseases and ensure high yields. It also reduces overhead costs of various farming operations. For instance, nature has ordained that the cauliflower and allied crops will grow better in winter season, but if the same crop is taken during summer, it becomes vulnerable to attack from various diseases. This out-of-the season cropping pattern for monetary profits will ultimately reduce the productivity of that crop.

The revenue from organic farming is distributed among the local labourers and farmers in the forms of labour charges, etc. This is good for the local market economy and encourages the growth of local commerce. Since the seeds for natural farming come from the local stock, the money spent on them is not siphoned off to multinational corporations. This, therefore, must be treated as a substantial saving on the cost of seeds. The labour cost also appreciates considerably in organic farming as the demand for the labour in the local area is increased. This is one more good reason for going organic!

(Translated from Marathi by Vishram Gupte)

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Karuna and Vasant Futane are good organic farmers, but conduct courses to train others as well.

SAMVAD

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(Contact persons: Karuna and Vasant Futane)

The size of the farm is 5.5 hectares including 3.4 hectares wasteland. About 0.2 ha is used for the farm house, the cattle shed and path; the rest (2.5 ha) is the cultivable land, on which the husband-wife couple, Vasant and Karuna Futane, have been practising sustainable agriculture since the past eight years.

Besides Vasant and Karuna, there are 6 male full-time workers and women working around 150 days. The Futanes do not use machines. They use only some traditional implements for ploughing, harrowing, hoeing and seeding.

For irrigation, in winter (1.6 hectare) and summer (0.8 hectare), they use water from four wells, which are shared with Futane's three brothers. The water is lifted by electric pumps through pipes to the field's upper borders from where it flows downwards. In order to raise the ground water level and minimise soil erosion, they have contour bunding in the fields and nala bunding in the streams.

In their own words: 'We made a beginning by doing away with all the artificial inputs like chemical fertilisers, pesticides, hybrid seeds etc. We realised that hybrid seeds need chemical fertilisers which in turn reduce plants' resistance to the pests, thereby making the use of pesticides inevitable. Hybrid seeds also need a lot of water. All this leads to a vicious circle of dependence.

'We looked for local varieties of seeds. Most of them were almost on the way to extinction. We nursed the few seeds we could find and increased their quantity. We found that the local varieties of seeds can withstand adverse conditions to a large extent. Besides, the different varieties are adapted to the different types of soil and the different patterns of rainfall. Now the local villagers often approach us for these local seeds and we are in a position to meet their requirements.

'The cultivated food crops are castor bean, green gram, paddy, cowpea, pigeon pea, maize, sorghum, bengal gram, wheat and soyabean. Besides, timber, medicinal and ornamental trees, and fruit trees like mango, papaya, sweet lime, coconut, guava, karonda, bulls heart, custard apple and jujube are also cultivated.'

Farming practices: 'Pest management with biocontrollers is not followed as we believe a natural balance is to be maintained between predator and pests. To create the optimum and natural conditions, we extensively practice mixed farming and intercropping Crop rotation is followed to control the pests in the soil. We have planted Sesbania grandiflora and allowed Acacia nilotica trees to grow in the orchard as a shelter for birds. Marigold is planted with brinjal as a companion plantation.

'In the cereal and pulse plots, weed control is done twice with a bullock-drawn implement. This kind of weeding is only necessary in the monsoons. In summer and winter, we control the weeds with handpicking only. All the weeds are used as mulch and nothing is taken out of the fields. Weeds and grass from the tree plantation are used as fodder.

'We had cultivated chick pea for the first three years, but it was not very successful, being completely devoured by larvae. Our farm is now host to a variety of birds of other predators hence there is natural biological/control. So we sowed chick pea last year after a gap of five years. The result: 2.5 quintals in only half an acre, which is considered very good for this area. This year, an acre has yielded six quintals.

'Tree-farming has been another major area of our experiments. To have a green fencing for our fields, we initially planted fast-growing species like eucalyptus and Subabool (Leucaena leucocephala). But we soon realised our mistake. Eucalyptus needs a lot of water and its leaves make the soil acidic, while the subabool seeds encroach the whole field and prove to be more troublesome than weeds. Besides, the subabool trees deprive other plants of manure and water.

'Now we have planted different varieties of trees with different growth rates. However, tree-farming does not yield quick income, there is dearth of resources and experiments often involve mistakes leading to losses. (Leucaena is one such example).'

Livestock: 'We are also interested in cattle-breeding. Our object is to have local breeds of cows with reasonably good milk yield. Cross-breeding with native breeds is done in this connection. Presently we have one Tharparkar bull.

'Our main reason for breeding cattle is to have draught animals as well as to obtain farmyard manure. Connected to the cow shed is a biogas plant, from which we get gas for lighting and cooking. The milk is fed to the calves and to meet our own needs. We sell some quantity of buttermilk. Sometimes we sell a cow or a bullock. At present we have nine cows, five bullocks and nine small cattle. In the monsoon the animals are grazed on a common pasture. In winter we let them graze as long as there is enough fodder. The rest of the winter and in summer we feed them fresh maize, clover, elephant grass and sorghum straw as well as groundnut hay.'

Vasant and Karuna changed over to sustainable agriculture in order to:

1) Stop pollution of the environment, food and water by agro chemicals;

2) Stop exploitation of the farmers by the industrial lobby; and

3) Be self-sufficient by minimising external inputs.

(Source: Prakruti, Mumbai and Communication with OIP)

MANOHAR KHAKE

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Has used cow urine as a fertiliser, growth hormone and pesticide. He has carried out extensive research at Yusuf Meharalli Centre, Panvel, Raigad in Maharashtra. His experience has shown that, cow urine ferments when used on onion and sitaphal leads to two to three times increase in yeild. (Source: OFAI Archives)

SHIV NARAYAN ADHAO

Rishi Kheti Prakalpa Jagar Society, At & Post Shendurjana Ghat, Tehsil Warud, Dist. Amravati – 444907, Maharashtra.

Shiv Narayan Adhao is involved in all aspects of natural farming like compost making, integrated energy management, watershed management and natural pest control. Earlier, he worked at the Friends Rural Centre, Rasulia for two years.

In his own words: ‘I began to realise that trying to prove the viability of natural farming by making a living on 8 acres was not going to prove much. Like other families in our village, mine too made demands on me to fulfill all their material needs through farming. I was opposed to this approach. My concerns were separate from theirs. I was more worried about finding alternatives for those farmers who, like me, had no other income except that derived from the land. I made desperate attempts trying to grow cash crops like cabbage and cauliflower on a large scale – which proved a total disaster. I suffered heavy losses and faced more criticism leading to further depression. But I couldn’t stop myself. I lived with the tension, drowning myself deeper into work. I read, wrote and studied trees, soil health, water problems, insect control, weeds, mulching – the whole works. People around me were not very encouraging but they were curious nevertheless. I had done a course in Homeopathy and a number of people would come for medicines, so they would also talk about my experiments.

Finally in 1992 after much debating, I decided to go headlong into experimentation with a funded project. I had sold off one 4-acre plot and bought land in Ladegaon which is about 150 kms from here. Then I sold off another 2.5 acres of orchard land. This orchard had dried up while I was away in Rasulia. And I did not make any attempts to save it. That year there was a severe shortage of water in our area and farmers got desperate trying to share whatever little was available. Now I had just 2 acres left and this I decided to devote fully for experiment. Today this plot is so covered with tiny plots of various experiments, there is no space left to put in another tree.

(Source: Communication with OIP)

DOSTI FARM

Dolar pada, Umargaon, Talasari Road, Post Girgaun, Talasri taluka, Thane district, Maharashtra. Phone: 0260 2576939

Dosti Farms was established by Shri Kishan Goradia, a Sarvodaya worker and founder of the Dosti Group of developers and builders. Dosti Farm produces organic vegetables.

Dosti also arranges school/college camps, or group camps on the farm. There is dormitory arrangement for 100 persons at a time.

(source: Brochure)

SUDHIR ARVIND CHIVATE

Vil. & Post Talbid, Tal. Karad, Dist. Satara - 415 109, Maharashtra. Phone: 02164-258028(pp), Cell: 09822320983

Sudhir Chivate is a farmer by birth and an electrician by training. Immediately after his training in 1991, he joined an electrical company in Pune and inspite of his employers being extremely happy with his performance packed up his bag and returned home to the land after a short stint of three months. Ever since, he has not looked at anything but organic farming. Chivate is an expert farmer cultivating sugarcane and ginger. The sugarcane is processed on his farm to make jaggery and cane syrup – known as ‘kakvi’ locally. His jaggery and kakvi are so popular that people from Maharashtra and around place orders in advance. He has also now developed soft jaggery powder that has extensive demand for Maharashtrian ‘puran poli.’ The product goes by the brand named ‘Chivate’s.’ His ginger production he claims, is easily 1 ½ times the ordinary yield. He is able to harvest 300 kgs of ginger per gunta (1089 sq.ft). His record is a single ginger rhizome weighing 5 ½ kgs. The farm also has 150 mango trees of 6 different varieties. He got interested in organic farming because his grandfather was a traditional vaidhya who maintained extensive notes of his medical practices. There is a small workshop on his farm and he has invested close to Rs.3 lakhs on farm tool innovations. He grows seven varieties of sugarcane and gets a yield of 28-30 tonnes per acre. Chivate’s farm in recent times has also turned into a tourist and study destination where students, farmer groups and families come for a study-cum-outing expedition. All visitors are served home cooked organic food on the farm, turning the visit into a wholesome experience to remember. He uses his own produce for sugarcane and ginger seed. The 12 cattle heads supply him with dung and urine to meet compost and manure requirements.

(Source: Communication with OIP)

SOPAN BHAURAO AWACHAR

Gayatri’ 66/A, Vikas Nagar, Koregaon Road, Parbhani 431401, Maharashtra.

(Source: Jayant Barve)

VISHWASRAO RAJARAM DEVARE

Chairman, Matoshri Gitabai Rajaram, Devare Shaikshanik Mandal, A/p Masadi, Tal- Sakri, Dist- Dhule 424 302, Maharashtra. Ph. 02568 - 275788

Group leader of organic farmers. (Source: Jayant Barve)

SHRI. MADHAV DATTARAYA BARVE

A/p. Kothure, Tal Niphad, Dist- Nasik - 422 302, Maharashtra. Ph. 02550 - 241318

Creating Nakshtra Van and work with wild plants.

(Source: Jayant Barve)

SHRI. JAYAPRAKASH SHALIGRAM PATIL

202, R.B.C. Complex, 5, Vidyanagar, Tal & Dist- Akola, Maharashtra. Ph. 0724 - 2401026

All house hold requirements are produced on the farm except salt and flowers. His entire life style is based on the principals of Gandhian Philosophy.

(Source: Jayant Barve)

DR. PRASAD DEODHAR

Bhagirath Gramvikas Pratishthan, A/p Zarap, Tal. Kudal, Dist- Sindhudurg, Maharashtra. Ph. 02362 - 232095, Hospital - 232259

Work on rural development and water management.

(Source: Jayant Barve)

RAMESH BABURAO DESHMUKH

A/p Shirala(Nemane), Tal. Khamgaon, Dist- Buldhana, Maharashtra. Ph. 07263 – 267337

(Source: Jayant Barve)

SMT. CHANDRAPRABHA BOKEY

A/p Warkhed, Tal. Tiwasa, Dist- Amravati 444 602, Maharashtra. Ph. 07255 - 226011

She is the inspiration and impetus to MOFF, Pune.

(Source: Jayant Barve)

SHRI. SUDHAKAR MAHADORE

Akshay Sewa Sanstha, A/p. Medaki, Tal. Bramhapuri, Dist- Chandrapur, Maharashtra.

(Source: Jayant Barve)

VINAYAK MAHAJAN

A/p. Kudavale, Tal. Dapoli, Educating farmers for Org., Dist - Ratnagiri 415 712, Maharashtra.

(Source: Jayant Barve)

MRS. VARSHA CHANDRAKANT KOTKAR

Vikas Sevabhavi Sanstha, Vidhyanagar, A/p. & Dist - Hingoli 431 513, Maharashtra. Ph. 02456 – 222082

(Source: Jayant Barve)

KANTILAL NALGE

A/p Narayangaon, Tal- Shirur, Dist- Pune, Maharashtra. Cell: 9890984066

(Source: Jayant Barve)

UDDHAV KORE

A/p. Wirli, Tal. Lakhandur, Dist - Bhandara 441 910, Maharashtra. Ph. 07181- 265764

(Source: Jayant Barve)

DR. MAHADEV RUDRAPPA PACHEGAONKAR

A/p. Poharegaon, Tal. Renapur, Dist – Latur, Maharashtra. Ph. 02382 - 232560

Expert in homeopathic treatments for cattle. Expert in Animal Husbandary.

(Source: Jayant Barve)

KALIDAS PAUL

A/p. Khandali, Tal. Ahmedpur, Dist- Latur, Maharashtra. Cell: 9420214057

(Source: Jayant Barve)

SHREENIVAS BAGAL

A/p. Chikurde, Tal. Shirala, Dist- Sangli, Maharashtra. Cell: 9822493117

Organic jaggery expert, group leader.

(Source: Jayant Barve)

HARBANS SINGH WASARIKAR

House No. 1/1/451, Nanded Housing Society, Mill Unit, A/p. & Dist- Nanded-431 602, Maharashtra. Ph. 02462 – 252630

(Source: Jayant Barve)

DNYANESHWAR DHANGE (MAULI)

Chairman, Gandhi Jaivik Sheti Sangh, A/p Amla, Tal. & Dist – Wardha, Maharashtra.

(Source: Jayant Barve)

NAGESH SWAMI

A/p Shivade Tal - Umbraj, Dist – Satara, Maharashtra. Cell: 9822848432

Works with Dabholkar's Prayog Pariwar.

(Source: Jayant Barve)

JAYAWANT WADEKAR

Sahjeevan Krishi Sadhana, near Parali Naka, Tal. Wada, Dist- Thane, Maharashtra. Ph. 02526 - 271444

Organic Rice, Preservation of Rice verities, Member of Mhalagi Prabhodhini, Bhaindar.

(Source: Jayant Barve)

PRASHANT KHANJHODE

Baliraja Krushi Vikas Audyogik, Bahuuddeshiya Sanstha, A/p. Karanjala, Tal & Dist – Washim, Maharashtra . Ph. 07256 – 225138

(Source: Jayant Barve)

BAPUSAHEB KORADE.

At / Post - Bhat Marali, Tal & Dist – Satara, Maharashtra. Cell: 9823505025

Has a two acre organic horticulture farm and has developed great water & nutrition management practices.

(Source: Jayant Barve)

BABRUWAN KANASE

A/p. Surdi-Sonesangavi, Tal. Kej, Dist – Beed, Maharashtra. Ph. 02445 – 232747

(Source: Jayant Barve)

SHAHAJIRAO SAMBHAJIRAO GORE

President, Marathwada Krushi Padavidhar, Shetkari Sangh, A/p. Gorewadi,

Tal. & Dist- Osmanabad 431 508, Maharashtra. Ph. 02472-232053

(Source: Jayant Barve)

RAJENDRA PRALHAD SAMBRE

A/p. Ashwi(Budruk), Tal. Sangamner, Ahmednagar 422 605, Maharashtra.

Uses taditional seeds, multi-cropping and amrut pani.

(Source: Jayant Barve)

MAHENDRA P. SHROFF

Shroff Farm, A/p. Vangaon(Western Railway) Dist - Thane, 401 103, Maharashtra.

Organic chikoo plantation.

(Source: Jayant Barve)

RAGHUNATH PISAL

A/p Hanmantvadiye, Tal. Khanapur, Dist – Sangli, Maharashtra. Cell: 9881102883

Grows organic grapes, best management practices.

(Source: Jayant Barve)

PRAKASH TULPULE

Tapodharn, Talegaon Railway Station, Dist – Pune, Maharashtra.

Huge plantaion work in Kutch (Guj.) in saline lands. He has planted three lakh horticulture plants.

(Source: Jayant Barve)

DR. RAVINDRA M. VORA

Nisarga Pratishthan, Vanashree Hutatma Nagar, Sangli 416 416, Maharashtra.

Promotion of organic food for health, waste land development and rain water harvesting.

(Source: Jayant Barve)

VINIYOG PARIVAR TRUST

B-2/104, Vaibhav, Jambli Gali, Borivili(W), Mumbai 400 092 Ph. 022 - 8991781

Works with issues related to gopalan, ahimsa and organic food.

(Source: Jayant Barve)

PANDURANG B. SHITOLE

Gramparivartan Post Nhavisandes Pune, 412216 Ph - 020 / 6819611

Industrialist, involved in organic farming for the last 20 years.

(Source: Jayant Barve)

PADMAKAR CHINCHOLE

Krusha Agency Near S.T.Stand Post – Jamner, Dist – Jalgaon, Maharashtra. Ph - 02580 / 232554 R, Cell: 9422771454

Growing, producing and exporting organic jaggery.

(Source: Jayant Barve)

MANOJ JAVNJAL

A/p - Katol, Dist – Nagpur, Maharashtra. Cell: 0982251913

(Source: Jayant Barve)

NETAJI TAJALE

A/p - Salai, Tal – Savner, Maharashtra. Ph - 07113 / 241116

(Source: Jayant Barve)

JAGNNATH BELSARE

A/p - Movad, Tal - Narkhed, Dist – Nagpur, Maharashtra. Cell: 09423111461

Organic cotton rain fed farming in Vidharba region.

(Source: Jayant Barve)

GHANSHYAM CHOPADE

12, Bhapatwadi, Vardha, Maharashta. Cell: 09423087087

Organic cotton rain fed farming in Vidharba region.

(Source: Jayant Barve)

BAPU MAHAJAN

A/p Karanj Bhoge, Tal & Dist - Vardha, Maharashtra . Cell: 09922354663

Organic cotton rain fed farming in Vidharba region.

(Source: Jayant Barve)

PANKAJ PATIL

At- Haladgaon, Post Khandala, Tal – Samudrapur, Dist - Vardha, Maharashtra. Cell:09822363402

Organic cotton rain fed farming in Vidharba region.

(Source: Jayant Barve)

DNYANESHWAR DHAGE

A/p Giroli Dhage, Tal & Dist – Vardha, Maharashtra. Cell: 09372480226

Organic cotton rain fed farming in Vidharba region.

(Source: Jayant Barve)

VASANTRAO PATIL

A/p - Vadi , Tal - Nandura, Dist – Buldhana, Maharashtra. Cell: 09421472340

Vegetables and organic cotton rain fed farming in Vidharba region.

(Source: Jayant Barve)

SHRI. SHANKAR NARAYAN BOBADE

A/p Kalameshwar, Tal – Kalameshwar, Dist – Nagpur, Maharashtra. Cell: 09226132071, 07118091739

Vegetables and organic cotton rain fed farming in Vidharba region.

(Source: Jayant Barve)

SHRI. PAVAN MISHRA

A/p - Kamar, Tal - Karanjalad, Dist – Vashim, Maharashtra. Cell: 09423851431

Vegetables organic cotton rain fed farming in Vidharba region.

(Source: Jayant Barve)

M/S. SHALIGRAM SHARMILA

A/p - Arangaon, Dist – AhmedNagar, Maharashtra. Cell: 9822327260

Pruthvi Sanstha, orgainc farmer, promoting Krishi Rishi organic farming method of Mohan Deshpande among small and marginal farmers.

(Source: Jayant Barve)

SANJAY SONTAKKE

Gramshri 16, Pasayadan Mahalaxminagar – 2, Manewade Marg, Nagpur, Maharashtra. Ph - 0712 / 2749248

Publishes a monthly magazine on organic farming

(Source: Jayant Barve)

KALPANATAI VILAS SALUNKHE

Panipanchayat, Khalad, Dist- Pune, Maharashtra.

Dry land farming and water harvesting.

(Source: Jayant Barve)

VAIJANATH SHETE

At Post Andora, Taluka Talzapur, District Osmanabad – 413 603, Maharashtra. Phone: Ph. 02471 - 246142, Off. 246168

Hete is a farmer who was nominated assistant researcher at the Agricultural University of Maharashtra. He heads a farmer's cooperative of 500 persons of which some 200 odd are organic. He has also written a book on sugarcane cultivation.

(Source: Jayant Barve)

MILIND & BALBAIN MURUGKAR

892/2/2 Urgas, Plot No 7 Chetan Nagar, Near Seimens Colony, Nashik – 422 009, Maharashtra.

(Source: Jayant Barve)

MS GANGALAXMI B.

Kheti Goshala, Brahm Vidya Mandir Ashram, Post Pavnar, Wardha District – 442 111, Maharashtra. Phone: 07152 3518

All ashramites are organic farmers.

(Source: Jayant Barve)

DR. C.M. PANDIT

6 Suruchi, Sant Janabai Path, Vile Parle (E), Mumbai – 400 057, Maharashtra. Phone: 022 – 26147363

(Source: Jayant Barve)

G.G. PAREKH

Tara, Bombay-Pune-Road, Post Barapada, Panvel – 410 207, Maharashtra.

(Source: Jayant Barve)

VASANT GANGAVANE

Gokul Pratishtan, 2150 Juvekha House, Behind Ram Mandir, Ratnagiri, Maharashtra.

(Source: Jayant Barve)

Dr. V. P. VARATAK

Smriti Villa, 2nd Floor, Revenue Colony, Near Hotel Bhushan, Near Modern High School, Jangli Maharaj Road, Pune, Maharashtra.

(Source: Jayant Barve)

ALL INDIA FEDERATION OF ORGANIC FARMING (AIFOF)

'C' Satya Bhavna, Raghunath Nagar, Thane (W) – 400 604, Maharashtra.

(Source: Communication with OIP)

GAJANAN H. GARGHATE

Magan Sangrahalaya Samiti, Kumarappa Marg, Wardha 442001, Maharashtra

Ph. 07152 245082

(Source: Communication with OIP)

ANIL R. GUDDHE

Magan Sangrahalaya Samiti, Kumarappa Marg, Wardha 442001, Maharashtra

(Source: Communication with OIP)

MEDICINAL PLANTS CONSERVATION CENTRE RURAL COMMUNES

2, Taj Apartment, 97-A/1-8, Salisbury Park, (Next to Pune Adventist Hospital,) Pune - 411 037, Maharashtra. Ph.: 020-24270216/24269418, Email: rcmpcc@vsnl.com

Contact: Vivek Gour Broome, J.E.

Organic Farm, Marunji P.O., Mulshi Taluka, Pune 411 057, Maharashtra. Cell: 09822828102 Email: gourbroome@vsnl.net

(Source: Brochure)

RAMBHAU SHIRODE

41B, Jeevan Deep, S.V. Sovani Path, Girgaum, Mumbai - 400 004, Maharashtra. Ph.: 022-23852045

Karuna, 11, Vivekanand Nagar, Chalisgaon 424 101, Maharashtra. Ph.: 02589-225261, Cell: 09422276552

Organic Farmer

(Source: Communication with OIP)

MANOHAR SHRIRAM PARCHURE

258 Ramnagar, Nagpur – 440 033, Maharashtra.

Manohar Parchure has 16 hectares of farmland, on which four male labourers work full-time. He also hires labour for around 400 mandays in a year. The soil is mostly black cotton with a pH of around 7. Average rainfall is between 800 and 1000 mm.

Twelve hectares of his farm are covered by crops like soyabean, sorghum, green gram, black gram, maize, chili, groundnut and cotton. Four hectares have teak, amla, sweet lime, mango and jujube.

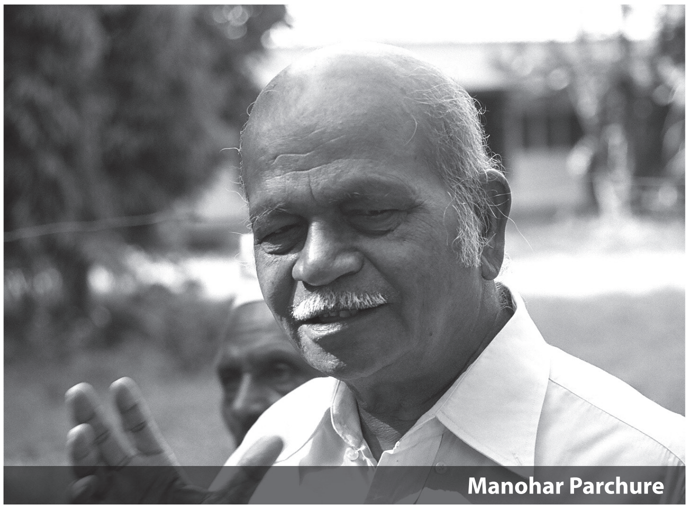
To deal with pests, Parchure first sprays diluted cow urine (10 litres urine with 100 litres water) at the rate of 10 litres per hectare and, one week later, neem extract (25 litres diluted with 100 litres water) at 25 litres per hectare. He has used this practice four times in the last three years on cotton, groundnut, soyabean and pigeon pea with good results every time.

In the beginning, he tried to produce without tilling, but the weeds were too strong for some crops. That is why he now harrows two or three times during the rainy season. In the tree plantation area, the weeds are cut and used as mulch. Cutting weeds is only necessary when the trees are small.

Parchure has installed a drip irrigation system for his cotton and sweet lime plantations. Gram and wheat are irrigated in the winter with water pumped from a well. The jujube and mango trees are watered by earthen pots embedded in the soil which drip slowly.

In the plantations, he mulches the weeds to bring back the nutrients to the soil. On the whole farm, he also applies five tonnes of vermicasts per hectare. This is produced on the farm itself. The dung required for producing the vermicasts is purchased.

Parchure retains two pairs of bullocks, which are used for transport and some tilling work. Straw from maize and sorghum is stored as fodder for the bullocks. For transport he uses the bullock cart or an all terrain diesel vehicle. He also has four Indian breed cows. Their dung and urine is used for preparing beejamrit and jeewamrit, the fermented combinations used for treating the seeds before sowing and for treating the soil to convert it into a living soil.



Manohar Parchure

Over the last 15 years, standard farming practices have been evolved. These include 1) minimum tillage; 2) crop rotation; 3) mixed cropping; 4) choice of crop mixes on the basis of symbiotic action; 5) use of beejamrit to treat the seeds; 6) use of jiwamrit to treat the soil; 7) rain water harvesting to catch the water where it falls; 8) sowing suitable trap crops in every main crop; 9) use of yellow traps, night traps and pheromone traps for estimating the virulence of pest attack; and 10) use of neem or cow urine or other biological pest control agents only when the presence of pest is beyond the threshhold limit.

Parchure believes that by keeping your own produce as seed, discarding chemicals and by adopting the farming practices referred to above it is possible to obtain good production even in the first year of conversion to organic farming and one need not fear loss of productivity.

Manohar Parchure: In his own words

I have written books in Marathi titled 'Sheti kara ani shrimant wha' (Farm and Get Rich), Udyachi Sheti (Tomorrow's Agriculture), Sendriya Sheti Kashi Karal (How To Practice Organic Farming) and Matitale Moti (Jewels Under the Earth): a collection of articles published in Marathi dailies like Deshonnati, Tarun Bharat and Loksatta.

As a result of my experiences, I can now say very confidently that any crop can be grown organically without use of chemicals either in the form of fertiliser or pesticide. I have stopped using chemicals for the last 14 years and the fertility of my soil has improved enormously. I keep my own seeds, use vermiculture produced on the farm itself and use repellents like marigold or Krishna tulasi as protection against pests and diseases. The organic crops are healthy and more resistant to diseases.

Gradually, I am reducing cultivation so that I can reach the goal of no cultivation. Farmers in my neighbourhood who used to previously laugh at my experiments are all admirers now. They volunteered to adopt organic farming and under my guidance are practising since 1996.

On the 2nd October 1997, Gandhi Jayanti day, my guru Shri Masanobu Fukuoka visited my farm and was pleased to see the standing crops of rice, cotton, soybean, sorghum etc. I showed him his portrait and my worship of his ideas of natural farming like an Eklavya of Mahabharat days. He was happy to hear the story and advised me to go out to farmers and preach his message of Natural Farming. Circumstances forced me to leave the farm and start propagating organic farming in Maharashtra and Madhya Pradesh.

I was honoured by the Government of India in 2004 when it appointed me as a member of the Empowered Technical Committee on Organic Farming. I was invited to address associate professors from 16 universities at the 'Winter School of Organic Farming' held at P.K.V. Akola in September 2004, where along with Dr. T.P. Rajendran of CICR Coimbatore, we presented before the agri-universities a new theory of crop nutrition called 'Living Soil Theory of Crop Nutrition'.

I have dedicated myself to the promotion of organic agriculture which is a step towards the final goal of natural farming. I have traveled through Maharashtra and Madhya Pradesh at my own cost propagating organic farming through farmers meetings attended by hundreds and thousands of farmers. I am happy to say that as a result of this work there are organic farmers in every taluka of these two states and their numbers are growing in geometric proportion every year.

(Source: Communication with OIP)

It is difficult to calculate net income per hectare, as both production and selling price are uncertain. Nevertheless, Parchure estimates that his net earnings vary between Rs.20,000 and Rs.30,000 per hectare per year as he can grow only one crop on 12 hectares and two crops on the balance four hectares.

For four years, from the farm season 1998-99, Shri Parchure divided his holding into four pieces of four hectares each and handed them over to four of his former employees to cultivate, each paying rent of Rs.16,000 for the land. However, from 2002-2003 the whole farm is now being cultivated as a model farm with a hired manager and labour. Any one who is interested in learning the techniques of organic farming can go and stay on the farm paying Rs.100 per day for vegetarian meals. Parchure now visits the farm only once a week and is available at Nagpur in the office of 'Deshonnati' a Marathi daily, where he works as a Special Honorary Editor for producing a weekly four page colour supplement devoted to the theory and practice of organic farming.

MAHARASHTRA ORGANIC FARMING FEDERATION (MOFF)

1038/11, Balaji Niwas, Flat No:5, Cosmos Bank Lane, Deep Bungalow Chowk, Model Colony, Pune-411 016, Maharashtra. Ph: 020) 25659090 / 32907302, Cell: 9881497092 / 9822060606, Email: moffpune@gmail.com, Web: www.moffindia.com

(Contact: Diliprao Deshmukh)

Maharashtra Organic Farming Federation (MOFF), Pune is an apex organisation working in the field of sustainable farming in Maharashtra.

MOFF conducted an intensive and extensive drive: 'The Farmers' Suicide Prevention Mission' in six districts of Vidharba region from June 2006 to March 2008. The phenomenal success in reducing farmer suicides in the region brought relief to many a people across the state and country.

Its practical approach to tackling situations and its work is based on the understanding that the only factor that farmers are in control of is the cost of cultivation. They can neither control the Government policies nor the market forces or the climatic patterns.

Based on this, MOFF has evolved 'Panchsutri,' a five point formula approach for reasonable livelihood for the small, marginal & resource poor farmers of the region.

The tenets are:

1. Change farmer mind-set.
2. Do not use hybrid seeds, chemical fertilisers, pesticides or weedicides.
3. Keep local breed cattle and use only local variety seeds.
4. Follow mixed cropping patterns and use on farm produced inputs to combat pests and increase soil fertility.
5. Process and market produce at village level.

Other Activities:

– Documentation of sustainable agriculture practices.

– Farmer training programmes.

– Establishment of farmers' groups.

– Participatory Guarantee System (PGS).

– Assistance in establishment of farmers' producer company.

– Marketing of organic farm produce as approved by MOFF.

– Conservation and protection of local seeds.

– Campaign against GM crops through women ('Seeds of Hope') groups.

The Gramdoot Yojana through Service Provider scheme of National Centre of Organic Farming (Government of India) is popularising sustainable agriculture and conducting trainings in sustainable agriculture with the help of 100 Gramdoots and 2000 Grammitras working with 26,500 farmers in 900 villages of Maharashtra. The Gramdoot Yojana is an experiment on their part towards an evergreen revolution for unifying rural society with its urban counterpart.

The Indian Institute of Sustainable Agriculture (IISA) at Ovale, Pune, Maharashtra, is in the process of being established. IISA promises to be the new and permanent home of the organic farming movement in India. The institute is conceived as a centre to provide serious direction and focus to organic farming in India, rest of Asia, Africa, Latin America and elsewhere through a participatory process of organic farmers.

(Source: Brochure and OFSB Archives)

VIDHARBHA ORGANIC FARMING ASSOCIATION (VOFA),

Shivaji Nagar, Yavatmal, District Yavatmal Maharashtra.Tel: 07232 243 999

(Contact:Ram Kalaspurkar 09423131214 Email: ram_kalaspurkar@rediffmail.com)

A group of farmers started a cooperative movement, VOFA in the Vidharbha region of Maharashtra. In the year 1994-95, VOFA split up and one of these splinters headed by Shri. Anand Subhedar a farmer by birth, who started organic farming in the region, committed himself totally to work for the organization.

Over the years VOFA became well known not only for its field based operations, but also its political activism on a national and international platform to influence policy changes in favor of the farming community. Seed is one of the key areas that VOFA has been focusing on. Ram Kalaspurkar, VOFA's secretary, has been voicing his concern relentlessly over how seed contamination has become a major issue; leading to lesser yields and lesser profits to the farmers. VOFA along with Navdanya of Uttarakhand has started a seed bank at Kalaspur village.

VOFA is constantly fighting against 'Terminator Seeds' which were given to Indian farmers without prior approvals from the Government. Very recently VOFA has found the reasons behind the sudden death of some species of plants like kikar, citrus, shesham, mango and teak. New plant viruses, and their relation with GMOs, how they evolve, how they kill a particular plant variety forever are the main issues that are a cause of concern for VOFA now.

Maharashtra has been a traditional cotton growing state, with rich black cotton soils and enjoyed the distinction of having the largest area under cotton. For a long period, Yeotmal district was regarded as the biggest market yard for cotton in Asia, till the farmers of Punjab and Andhra Pradesh took to cotton growing using chemical inputs.

VOFA's main aim is to promote organic farming and traditional sustainable practices in the Vidharbha region. Their farmer members' farms are certified by SKAL.

Extensive records and related documents regarding terminators seeds, new plant viruses, side effects of GMOs' etc. are available for dissemination to persons and groups working towards bringing sustainability to poor farmers.

(Reference: Communication with OIP)

DHARAMITRA

Bank of India Colony, Nalwadi, District Wardha,
Maharashtra. Ph: 07152 250584 Cell:0985034112 Email:
tarakdm_wda@sancharnet.in, dharamitra@sancharnet.in,
dharamitra.wda@gmail.com

This institution has done some serious studies on organic agriculture. Dr Tarak Kate was its Director. Now he has retired. The institute is now looking for a new director.

(Source: Communication with OIP)

NISARG ORGANIC FARM

Nisarg, H.No.46/490, A/P Punavale, Malwadi, Jambhe Road,
Taluka Mulshi, District Pune – 411 033, Maharashtra. Cell:
09422014638, Email: dsbanavali@vsnl.net

Contact:Dnyanesh S. Banavali

Nisarg organic farm followed Dabolkar's system of farming. The crops are grown in a four tier system of coriander, leafy vegetables and medicinal plants; papaya, custard apple and banana; coconut palms and the upper canopy supporting fruit vines like that of passion fruit.

Banavali has successfully regenerated degraded lands and mountain slopes using khus and grasses like vitiver that grow easily and cover barren lands with the first crop of soil holding plants. These are natural soil erosion controllers with long and fibrous root holding the slope in one piece. He believes that cultivation in one acre of land through this method can make a family self reliant and self supporting.

He has experimented with keeping goat and free-range poultry and a cow for sourcing high nitrogen content manure. He claims that pure goat manure that naturally occurs in pallet form is 4 times more potent than crushed pallets as the nitrogen content is released slowly from pallets over a period of time. The farm has fruit trees like jack and tamarind whose fruit are processed. He also promotes self employment by arranging to supply organic inputs and buyback produce.

(Source: Communication with OIP)

CHETANA-VIKAS

P.O. Gopuri, Wardha-442001, Maharashtra.
Ph.: 07152-241931, 240806, Cell: 9890308597
Email: chetana_wda@bsnl.in. Web: www.chetanavikas.org

Contact Person:Ashok Bang & Niranjana Maru.

Experienced Chetna Vikas team of Ashok Bang (l) and Niranjana Maru (r). They have done some extraordinary work on biodiversity based farming.

Chetna-Vikas draws its vision from the two words that make up its name. Consciousness and Development play an interlinked complementary role in giving direction to all their work.

It is a registered organization working for sustainable development in specific focused areas of interventions like organic agriculture, natural resource management, health, nutrition, womens' groups and environment education.

Spread across 200 villages of Wardha District, in Central India, its work at the micro grassroots level is with rural people facilitating rural centered stratergies of empowerment. It works through 16 local groups and directly with 100 farmers having land holdings in resource constrained conditions. Farmer trainings and demonstration farms are its forte.

At the macro level, it functions as a resource centre catering to the needs of fellow organizations and working alongside action fronts, activists groups, networks, policy making agencies in India and abroad.

As a part of Chetana Vikas work, it is supportive towards making farmer-market linkages. The farmers of this region cultivate the following:

Annuals - cotton, soybean, pigeon pea, mung, udad, chana, chavali, jowar, bajra, maize, amaranthus, dryland paddy, wheat, linseed, coriander, tomato, brinjal, chillies, ladies finger, cluster bean, dolichos bean, cucumber, bottle gourd, ridge gourd, bitter gourd, pumpkin, tapioca, elephant foot yam among others.

Perrenials - mango, guava, custard apple, aonla etc.

'Sakhi' is its quarterly newsletter.

It is affiliated to OFAI, SUSTAINET and the PGS Natioanl Council of India.

Chetana Vikas operates from its Resource Centre and 12 hectare demonstration farm campus.

(Source: Communication with OIP and website)

INSTITUTE FOR INTEGRATED RURAL DEVELOPMENT (IIRD)

PO Box. 562, Kanchan Nagar, Nakshatrawadi, Aurangabad –
431002, Maharashtra,

Farm School: at village Bidkin, Aurangabad Ph.: 0240-2376828, 2376336, Fax: 0240-2376866, Cell: 09850676145, Email: info@iird.org.in, Web: www.iird.org.in

Contact: Joy Daniel

IIRD is a grass root development organization of Marathwada region in Maharashtra State founded by late Dr. Alexander Daniel in 1987. It is a short distance from the famous Ajanta caves and rock cut temples. The primary objective of the institute is to promote development alternatives through the initiatives of groups of rural poor. Its partners in this effort are the people from grassroots segments of rural community, institution and organisation, university departments and Govt. bodies. One of its key areas of focus is organic farming. It is centrally involved in the promotion of the Participatory Guarantee Systems or PGS for organic labeled products and organises weekly 'Organic Bazaars' in many villages and Aurangabad town.

IIRD has played a dynamic role in the past decade by initiating and implementing programmes in organic agriculture that has influenced government policies and policies of voluntary organizations in favour of organic agriculture. IIRD in co-operation with several NGOs and thousands of organic farmers developed the first set of organic standards with relevance to agro-climatic and agricultural practices in the country (Concepts, Principles and Basic Standards of Indian Organic Agriculture).This has been translated into several languages by Organic Farming Association of India (OFAI).

It has a rich publication section with books and manuals on techniques and practices in organic farming. Their manual on appropriate methods is widely used as training material for organic farmers.

Other related areas of work include Organic Agriculture Training, Local Guarantee Systems and Alternative Certification, District Organic Promotion Centers (DOPC), Promotion of Organic Bazaars, Local Crop-diversity Conservation, vocational trainings etc.

IIRD is the initiator of the Participatory Guarantee Scheme for peer certification of organic farms.

(Source: Communication with OIP and website)

INSTITUTE OF NATURAL ORGANIC AGRICULTURE (INORA)

11-B, Kulkarni Bungalow, 5th Lane. Shikshak nagar, Paud Road, Pune - 411 038, Maharashtra. Ph/Fax: 020 25390096/ 020 25393045, Email: inora@vsnl.com, info@inoraindia.com, manjushree@inoraindia.com, web: www.inoraindia.com

INORA, a division of Know-How Foundation was established in 1992 by the late Prof. M.R.Bhiday, an eminent physicist and by economist and Padmashri Dr. R T Doshi.

INORA is a pioneer institute active in research, development and promotion of organic farm management, manufacturing of permitted organic farming inputs, organic farming certification systems, earthworm vermi-technology for biological solid and liquid waste composting, treatment and recycling. And, in employing anaerobic composting and bio gas technologies for waste recovery for methane and liquid manure production.

INORA is very active in and around Pune, offering its services for treating huge quantities of bio-wastes generated from food processing industries, religious places, floriculture farms, pharmaceuticals etc.

It also offers trainings in organic farming techniques and other related practices.

The exhaustive website provides a detailed account of its activities and outreach programmes. (Source: website)

MALPANI CHARITABLE TRUST

Office: - Ashish Building, End of Mumbai Central Bridge, Tardeo, Mumbai, 400034

Training Center: -

Krishi Vigyan Kendra, At- Chikhal Gaon, Post- Kinhavali, Taluka Shahpur, District Thane - 421405. Phone: 02527 -232583 Res.: 022 -27451929, Website: www.prayogpariwar.net

Malpani Charitable Trust is a non-profit NGO, established at Nanded, Maharashtra in 1969. The Trust has been providing financial assistance to needy sections of society for over three decades. One of its activities is to train the local inhabitants in natural means of farming and adopting an eco friendly life-style, so that they can preserve the natural surroundings and also lead a healthy and spiritual way of life. The Trust also encourages research in ayurvedic science (Panch Maha Bhoot) to improve the quality of farming without the use of any chemicals and pesticides.

The Trust has set up a model farm under the expert guidance of Shri Deepak Suchde, an expert on organic farming, who uses an ecologically friendly method known as Natueco Farming Science, developed by the late Shri S.A. Dabholkar. This is a science of farming which is based on knowledge and understanding of the rules of nature as well as the eco system, which will help the farmer and home gardener to continuously produce live, nutritive and productive (nursery) soil. This approach to preparing nursery soil based on Natueco Farming Science has been recognized by the IFOAM (International Federation of Organic Agriculture Moment). Deepak Suchde started 14 village industries based on the concept of 'Learn and Earn.' This programme was designed to let the participants learn and earn at the same time, by dividing their time between four hours of education and four hours of practical work. The industries were selected based on local availability of material and value added by processing these materials and increasing wealth indirectly. All production is meant for local consumption and the surplus is sold in outside markets on advance commitment from either side so that a proper remuneration is obtained. Shri Deepak's work on power-ghani has been recognised by the KVIC. The All India Bee Keeping Research Institute has also recognized his improved method of bee keeping.

These farming techniques are used on 45 acres of land. The Trust has a 10 guntha (¼ acre) 'live model' as a field demonstration to show how a rural family of five members can achieve a better quality of life on wasteland of 10 guntha, as long as it has an assured supply of 1000 liters of water per day. The techniques involve heap farming, recycled farm waste for fertiliser, no use of chemicals, pesticides and other toxins.

At the heart of this science is the concept of the five elements or 'Panch Maha Bhoot' – akash (sky, ether), vayu (air), agni (fire), jal (water), prithvi (earth). Seeds that are planted on nursery soil are prepared by proper alignment of these elements. The soil is prepared from surrounding biomass by adding top activated soil, and water. This creates humus, a soil condition from where the roots can absorb nutrition and water.

A theme farm is also being set up where farmers can get insights into the various stages of plant physiology in one visit. This will enable the farmers to understand the stages where human intervention is required to get natural and optimum yield.

Three years ago Deepak Suchde moved to Madya Pradesh. (His farming experiments there are detailed in the Madya Pradesh chapter.)

(Source: Communication with OIP)

ACADEMY OF DEVELOPMENT SCIENCE

Kashele Post, Karjat Taluka, District Raigad – 410 201, Maharashtra. Phone: 02148-224007, 224008, 224009 Fax: 02148-222479

ADS has developed a community gene bank for traditional rice varieties. The collection includes over 300 varieties from the Konkan region of Maharashtra. ADS also has a collection of ethno-medicinal plants to be found in the Western Ghats which are supplied to community health organisations, institutions and individuals. ADS has published a booklet in Marathi on a self-help method, namely, rice-cloning technology for small farmers as well as several booklets on medicinal plants and their uses.

(Source: Communication with CSE, 1993)

ACTION FOR AGRICULTURAL RENEWAL IN MAHARASHTRA (AFARM)

Building No. 2/23 A-B, Raisoni Park, Market yard, Pune 411037, Maharashtra. Phone: 426 4641, 426 8302, Fax: (020) - 426 6303, Email: afarm@vsnl.com, Website: www.afarm.org

(Contact Person: Dr. M.A. Ghare, Chairman. & Mr. M.N. Kondhalkar, Executive Director.)

AFARM, established in 1969, is a membership organization of voluntary agencies working in Maharashtra. It functions basically in the areas of development of water resources, community development and agricultural extension. Its main strategies are co-ordination, networking, and conducting training programmes. Over the past 30 years, AFARM has engaged itself in promoting sustainable development of water resources. Watershed development programmes are being pursued by AFARM with an 'integrated approach' to natural resource development, necessarily involving the communities. AFARM today has around 240 NGOs as corporate and associate members. It publishes a news letter called Mahiti Vahini, in addition to several booklets, video cassettes and CDs. Its support services include evaluations, surveys, soil and water analysis, ground water investigation, financial support for innovative and experimental activities, etc.

AFARM has developed its own methodology which is demonstrated on its one acre agricultural campus at Latur. As a result of organic farming practices followed over the past decade the plot is now fully fertile, yielding quality products.

Simultaneously, AFARM implemented the watershed plus programme on food security for marginal farmers with the help of 340 marginal farmers and 649 acres of land through out Maharashtra. With this experience and excellent results from the pilot programme, Govt. of Maharashtra has nominated AFARM as an Organic Farming Mitra Margadarshak Sanstha in Pune and Latur district. Under this programme AFARM has formed 22 farmers groups (comprising 2033 farmers and 2732.5 ha land) in Latur district. These groups meet regularly at AFARM training center, Latur, for exchange of their ideas, experiences and views regarding organic farming, composting, vermicomposting, bio-pesticides, bio-fertilisers, etc. AFARM has conducted district-wise workshop on organic farming throughout Maharashtra for the motivation and awareness of farmers. (Source: Communication with OIP)

JNANA PRABODHINI

510, Sadashiv Peth, Pune – 411 030, Maharashtra. Phone: 020 24477691 (O)/ 24250160 (R), Email: jnanaprabodhini@vsnl.com

Contact person: Bhageshree Pankshe

The objectives of the project are to work with women's self-help groups to promote organic farming practices, improved agricultural techniques, sustainable agriculture, demonstrate methods of in-situ composting, effective use of agricultural waste and various systems of growing food with minimum water.

Presently Jnana Prabodhini is working with 3000 women through 150 Self Help Groups.

(Source: Brochure)

INSTITUTE OF RURAL CREDIT & ENTREPRENEURSHIP DEVELOPMENT (IRCED)

6, Nishant Apt., Nagraj Colony, Vishrambag, Sangli – 416 415, Maharashtra. Phone: 0233 2300045/ 2302125/ 2303460, Email: san_irced@sancharnet.in, website: www.irced.com

Contact person: Kiran Kulkarni

The mission of IRCED is to undertake activities for the socio-economic development of deprived and marginalized people for self-reliance and sustainable growth from Maharashtra and North Karnataka. The main objective of the programme is to undertake and implement research and development activities (like watershed development, energy conservation, organic farming, food security, etc.) which will be conducive to the development of agriculture and rural economy.

Kiran Kulkarni has designed a model Grain Bank in Karzath (covering 150 tribal villages) that adapts to rural cultural modes and empowers village communities to address food security issues through indigenous solutions. The Grain Bank which is run entirely by the villagers ensures grain to all at low interest rates and has built-in mechanisms to ensure 100% loan repayment and interest recovery. Karzath is a drought prone area. For banking of bajra, jowar, etc., 25% of the deposit has to be a local staple. It also has a community plant germ plasm centre.

(Source: Brochure)

VIKAS SAHYOG PRATISHTHAN

130/1040,D.B. More Marg, Motilal Nagar 1, Goregoan (W), Mumbai 400 104.

Phone: 022 28762135, Fax: 022 28779256, Email: vsp1@vsnl.com, Website: www.vspindia.org

Vikas Sahyog Pratishthan (VSP) is a collective of voluntary organizations from all over Maharashtra concerned with addressing common issues affecting the poor and marginalized sections of society. Vikas Sahyog Pratishthan was formed in 1990 and registered as an autonomous body in 1995.

One of its activities is to campaign for an alternative technology in agriculture, based on the principles of no chemical fertilisers, no pesticides and no ploughing of the land. In other words: Natural Farming. Small farmers are provided with knowledge and skills as is found necessary. VSP utilises the existing biodiversity to the optimum in its programmes.

After experimenting for four years on a ten gunta plot (one gunta is 1089 sq.ft.) VSP has come to the conclusion that two additional guntas are needed for the creation of self – sufficiency for an average family. Thus the 12 gunta Nature Farming model has been evolved. This leads to self-reliance by catering to the family's essential needs such as food grains, vegetables, fruits, medicines, building material, and fuel.

(Source: brochure)

PRAKRUTI

Floor 2, Millenium Enclave, Plot 94, Sector 28, Vashi, Navi Mumbai 400703, Maharashtra. Ph.: 022 27899699, Web: www.savebombaycommittee.org

(Contact: Kisan Mehta Cell: 09223448857 Email: kisansbc@ gmail.com)

Established in 1988, Prakruti deals with sustainable living, Natural/Organic farming and conservation of water and energy with a view to reduce consumption of finite natural resources. The objective of Prakruti is to assist in developing an environmentally viable society based on natural living and sustainable agriculture. Prakruti takes up programmes and campaigns for encouraging farmers to change over to sustainable agriculture and for developing links with consumers for ensuring supply of high quality, chemical free, healthful food and fibre.

Prakruti has more than 100 active members and enjoys the support of more than 500 volunteers, a network built painstakingly over the last 30 years.

Members of Prakruti have conducted tours to hundreds of villages across India over the years to address local issues.

In 1995, campaign for organic natural cotton cultivation involving 135 farmers working on 1200 hectares of land turned out to be the largest organic cotton cultivation in the world.

In 2005, Prakruti members studied the success of Kambalwadi village in Kolhapur District of Maharashtra and brought out a report.

In 2006, Prakruti members undertook Vidarbha Sadbhavana Yatra to provide solace to the victim families and to study reasons for continuing farmer suicides in the Vidarbha region. Prakruti report on the findings and recommendations was presented to the Central and State governments.

One can find detailed reports of Prakruti's work and campaigns on their website.

Shri Kisan Mehta is the driving force behind this work.

(Source: Communication with OIP and web reference)

VAN VADI/VISION ACRES

Earthcare Books, 2 Anand Kamal Compound, 17 Carmichael Road, Mumbai – 400 026, Maharashtra. Phone: 4940920, Email: bharatmansata@gmail.com and

Earthcare Books, 10 Middleton Street, Kolkata – 700 071, West Bengal.

Bharat is involved in activities like networking, research and writing/editing/publishing. He has authored a book titled 'Ecological Visions', and several articles on ecology and agriculture. His recent books are 'The Great Agricultural Challenge' and 'Organic Revolution.' Vinita manages Earth Care Books which specialises in environment publications, including organic agriculture.

Van wadi is a commonly owned space by a few individuals which even today continues to provide lifes' learnings of land and relationships to its co-owners and to the community. Bharat describes the experiment in his own words:

About ten monsoons ago, three of us – accompanied by Shiva, our then local contact – walked several hours on this land. It was our first visit, and an unforgettable one. We were lost. But winding our way through thick vegetation, hunched below spreading branches and snaking creepers, I kept feeling this was the place we had waited four years and dozens of scouting trips to find!

While the trees we saw around were not very tall, in most parts they were dense. Just a few decades ago, this land had been a full-grown forest with trees having girths that took two pairs of outstretched arms to encircle. A few of their weathered stumps were still around to remind us of their glory now savagely mowed down by deforestation.

We were initially looking to buy about 10-15 acres for farming, to be divided among 3-4 of us. But with more 'like-minded' people joining, the idea of an 'alternative community' of sorts began to gradually evolve – a community that aspired to meet its varied needs in harmony with nature and fellow humans.

We tentatively named our land venture 'Vision Acres.' The broad aim was to 'live close to the land in an ethical and sustainable manner – to benefit ourselves, the land, and perhaps the local people as well.' Progressive self-reliance in basics, like food, was an important goal.

The first guiding principle was earthcare. At least half the land would be under tree cover; agro-chemicals prohibited; water usage conservative; extensive mono-cultures shunned, and biodiversity aided through integration of various edible and locally useful species, particularly indigenous varieties, suited to existing conditions.

Our second guiding principle was 'fair dealings with people and respect for local culture.' Simple lifestyles and social discretion were mentioned in this context.

The third guideline posited that 'quality of life, and local self-reliance should have priority over considerations of monetary profit.'

Eventually we bought 64 contiguous acres of which 10% of the land was held in common, while the balance 90% was demarcated into individual plots. The common land was for access roads, and for sighting shared infrastructural facilities like a well, common house, nursery, etc; or for any common projects that may be taken up in the future.

Several monsoons have passed since we first visited the land. Much has happened in these years, though at its own sweet, or sometimes tortuous, pace. Over the years, we managed to complete our official boundary survey, do a botanical survey of our main tree and shrub species, and a partial, internal survey of the land's topography and prominent features. We have built our common house and found four full-time local people to live and work on the land.

It was the adivasis who showed us that we could grow here a variety of local millets such as nacchni (ragi, finger millet), varie, kangu – and rice too; the latter in low-lying, relatively flat, run-off beds at the mouth of minor streams, which required only a little more levelling and careful bunding to retain the rainwater needed by the rice plants.

We learnt too from our adivasi workers that we have a number of potential clearances – perhaps totalling a quarter of our entire land area – presently under a predominance of shrubs like the uksi (Getonia floribunda) and the thorny karvanda (Carissa carandas). These we cut and pushed back to form a dry, protective hedge to keep wandering cattle out.

If there are any people left on this earth who can teach our floundering 'millennium generation' the fine art and science of co-existing in harmony with the forest, it is the adivasis. Or rather, just a few among them now, who still retain the knowledge, skills and the native cultural perspective.

In an average year, the rainfall on our land is close to 200 cms. Much of the rain is soaked by the earth and percolates downward to recharge the groundwater held by underlying aquifers. When a bore-well on our land was first contemplated some years ago, several in our group expressed their reservations. However, we decided to go for one on the condition that we would have only a hand-pump – to avoid wastage. This, we felt, would ensure that the annual withdrawal of ground water never exceeds annual recharge.

While inadequate exposure to sunlight is a limiting factor in growing food crops on terrain that is overgrown with vegetation, the proximity of forested area affords a number of advantages as well. In particular, we have generous abundance of biomass (leaf litter mulch), rich silt and vermicastings to serve as excellent organic fertiliser and soil conditioner – obtained free from our own land, without the need of any other external inputs for growing our field crops, vegetables and fruit trees.

Over the years we have experimented with growing a variety of vegetables particularly indigenous varieties, whose seeds we save from our previous year's crop. We have harvested a good amount of bhendi (okra), bottle-gourd, cucumber, shirali (ridged-gourd), ghosali (sponge gourd), kohla, vangi (brinjal), dudhi (pumpkin), abai (jackbean), some gavar (cluster beans), winged beans, Muli (radish) and leafy greens.

We planted rice as well, experimenting initially with about seven different indigenous varieties obtained from ADS, Kashele. Subsequently we stuck to only two kinds - one, the tall, indigenous Surati Kolam (Nawabi Kolam), whose seeds we got from Bhaskarbhai Save. The other – Ratna, a dwarf 'high-yielding variety', which has become the most common choice of many farmers in our area, including our own adivasi workers.

Over 150 trees have been planted by us in the vicinity of the house. These include 15 mango. 15 Sitaphal, 11 Coconut, 9 Banana, 6 Drumstick, 10 Guava and lesser numbers of Jackfruit, Chickoo, Dalim (Pomegranate), Ramphal (Bullsheart), Lime, Mosambi (Sweet Lime), Papaya, Bamboo, Badam, Tamarind, Jambul, Neem, Agastha, Kadi-patta, Banyan, Peepal, Gulmohar, Champa (Michelia champaca) and a few other species.

In the forested areas and along main pathways, we have additionally planted about 200 jambuls, a hundred mangos, several dozen sitaphals (Custard Apple), a few jackfruit, some bamboo, tulsi (Holy Basil), and a few ficus species–banyan and peepal (Ficus religiosa). Some years ago, we had also planted a few hundred forest species, many of which were medicinal. We have left a few of our more dense forest zones undisturbed to grow as sacred groves of wilderness and natural diversity.

(Source:Bharat Mansata)

VASANTRAO BOMBATKAR

Secretary, Akhil Bharat Krishi Goseva Sangh, Post Gopuri,
District Wardha 442 114, Maharashtra.

(Residence: Gitai Nagar, Post Gopuri, Wardha – 442 001,
Maharashtra.)

Vasantrao Bombatkar has practical experience in farming, cow rearing and manure making. He has written a book on compost making, the NADEP way. He is also the author of 'The Miracle Called Compost' and the editor of a monthly newsletter titled 'Gograss.' He has started a movement against fertilisers and pesticides and has organised camps in many states.

(Source: Communication with OIP)

GREEN CROSS SOCIETY

203, Nalanda, Opp. Pratap Society, Off J.P. Road, Andheri
(W) Mumbai – 400 053, Maharashtra. Phone: 6238467
(Contact: Shantu Shenai)

Green Cross is an NGO involved in the promotion of vermiculture and effective methods of dealing with sewage/garbage treatment in Thane district, Mumbai.

Its brochure states:

We are willing to provide consultancy in vermiculture biotechnology and other vermi-innovations at cost. We seek funding for specific public interest projects like garbage/sewage management through vermiculture biotechnology, organic and natural farming, agro-forestry, protection of existing forests, protection of medicinal plants, protection of our biodiversity, public programs for good civic sense, public programmes for good health through traditional methods and systems, promotion of Vruksha-Ayurveda, public programmes for better communication and relationships, city planning with environmentally sound systems, environment networks, organic farm tours, craft workshops for teachers/ street children to train them to make saleable articles from waste, promotion of potted plants, bouquet businesses etc.

(Source: Information sheet)

THE HEALTH AWARENESS CENTRE (THAC)

C/o Streehitavardhini, Lokmanya Nagar, K. Gadgil Marg, Mumbai – 400 025, Maharashtra. Ph.: 022 24361672, 24320788, Email: thacindia@yahoo.com

Organic Farm: Shree Kheti, at Vangani Village, Raigad District, Maharashtra

Contact: Dr. Vijaya Venkat

A few kilometers ahead of Badlapur, on the Mumbai-Pune rail route, lies Vangani – which is still surrounded by the vestiges of what was, half a century ago, dense natural forest. A short walk from the station lie the Mantri Farms, and within them – Shree Kheti, nourished by the river. On the west, the unmatched 'night sky' above, (the Astronomer's Association here, has visitors from all over the world), the craggy, peaks of the western ghats circling it, Shree Kheti, is a result of moving from numbers to nourishment, from self care to health care to earth care. From a system of cure to care.

The Health Awareness Centre (THAC) 1989, Mumbai:

THAC's main role is to generate awareness about correct foods and their role in health management. This helps to establish and understand the links between our living habits and its effects on the environment. THAC helps people to experientially open up the relationship with natural laws – to help people look after their own health, without dependence on any health-cure-system. It is THAC's challenge to provide a space where philosophy and activity can be practiced, where economy and the basic needs of life can be met, and where health and healthful living can be experienced. Selfcare is health care is earthcare is THAC's slogan. THAC is completely self-sustained. It is not founded by an organization – government or otherwise. It works on a no-profit /no-loss basis, with the intention of making people self-reliant, self-sufficient, healthy and happy.

The earthcare components of THAC's philosophy are integrated at Vangani. Shree Kheti is its launching pad.

Vangani Ventures:

The experiment at Vangani, has been to:

- Introduce a collective effort to care, for the earth and self.
- Reject all chemicals, fertilisers, pesticides, hybrid seeds, in short, modern agricultural tools and methods have been replaced, through trial and error by dynamic organic methods. These methods include vermiculture, biogas, composting, multiple cropping and regeneration.
- Replenish and regenerate the soil and land-thereby allowing an ancient forest to re-grow. The entire 'original forest' was sacrificed for the fast expanding/demanding growth of the railways.
- Provide a home to disappearing local berries, roots, tubers, vegetables and fruits – and the countless species that visit, for them.
- Creating a space to observe and absorb earth energies – and its effects on us, by simply watching/responding to nature.
- Integrate with the local community, to make 'production' (of food-learning-healing) as a 'protective' activity.

At the micro-level:

- Work with hands, at the farm itself.
- Experience directly a combination of fresh air, sunlight, silence – as energies/fuels/resources.
- Recuperate and detoxify at the physical/mental/emotional levels.
- Introspect and relax into the integral nature of Nature.
- Listen to the body – and observe how it responds to an unpolluted, quiet atmosphere.

At the Community Level:

The land is made productive – without damaging/polluting the air, water or soil.

Regional and indigenous species of vegetables, herbs and fruits are grown – seasonally.

Rice which Vangani village had stopped growing for decades has been re-started.

Classes are held here – so are gatherings and workshops.

In conjunction with the Forest Department, 1 acre of land has been given for joint use by the community to grow and maintain local fruit and fuel bearing trees.

At the Macro Level:

To expand the definition of Food as:

Food should be natural – consisting of organic food elements in their natural, unaltered state;

Food should be whole – complete and unfragmented, neither refined nor enriched;

Food should be poison free – organically grown, free from poisonous chemical residues and additives.

To demonstrate the connection between food and disease, relating that to food and personal health, and thereby to the health of the earth. A community strategy (like the involvement of the Anganwadi children, their parents and teachers) helps strengthen awareness of sustainable models of health care. It has been THAC's experience, that factors that lead to illness, are really nothing but the failure of applying proper health care measures.

Food-Body-Earth

As far back as 1990, THAC was involved with Prakriti, in organizing the first ever conference on Natural-Living-Natural Farming- Natural Habitat, at Bordi in Maharashtra. It was the first time that THAC was in an 'outside setting' making organic food for a large gathering. Many pioneering natural farmers over the years from Bhaskar Save, to Masanobu Fukuoka & Bill Morrisson were inspirational in directing the vision and direction of THAC – as a result of this gathering.

The connection between health and the environment, through our daily living practices, is THAC's continuing mission – vis-à-vis Shree Kheti. This is to create a platform to bring about a collective change beginning with how we live, what we choose, buy and consume.

GOMUKH

Environmental Trust For Sustainable Development, Durga 92/2 Gangote path Erandavane, Pune 411 004. Telefax 020 25660160, 25673324, 25651434, Email: Gomukh@vsnl.com

The Gomukh Environmental Trust for Sustainable Development is a public charitable trust for the promotion of ecological restoration and social justice. It has implemented soil and water conservation works in 17 villages in the Kolwan Valley, Munshi taluka, Pune, under various state government sponsored schemes. Having provided water security to the Kolwan Valley, Gomukh Trust has, since June 2000, diversified its activities to provide training, technical assistance, employment opportunities, marketing assistance for enhancing the social and economic quality of life of the local population.

(Source: Brochure)

APPROPRIATE RURAL TECHNOLOGY INSTITUTE (ARTI)

Pune Office: Maninee Apartments, S.No. 13, Dhayarigaon, Pune 411 041, Maharashtra. Ph.: 020-24390348/24392284, Fax: 020-24390348, Email: arti_pune@vsnl.net

Plaltan Office: Arti Rural Entrepreneurship Development Centre, Ganesh Nagar (Algudewadi), Phaltan-Baramati Road, Tal. Phaltan, Dist. Satara 415 523, Maharashtra. Ph.: 02166-225200/200342

The technologies developed by ARTI are based on known scientific principles. ARTI has standardised / modified all technologies through field testing to suit local conditions.

Following are a sample:

1. Propagation of dicotyledonous species by the simple method of rooted cuttings.
2. Leaf as a propagule of dicot plants.
3. Innovative rural nursery techniques.
4. Nursery business based on seedlings of seasonal crop species.
5. Plant tissue culture.
6. Farming on permanent raised beds.
7. Using seawater for irrigation.
8. Growing root drugs in sand filled channels.
9. High intensity cultivation of cattle fodder.
10. Production of root mats.
11. Low cost greenhouse.
12. Non degradable treatment for bamboo for outdoor structures.
13. Low cost water tank built with bamboo.
14. Growing bamboo as a crop.
15. Shampoo powder from pods of Acacia auriculiformis.
16. Subsurface drip irrigation for tree plantations.
17. Sewage disposal through plantation of timber and fuelwood.
18. Rural energy from agro-waste.
19. Improved cookstoves.
20. Fuel briquettes from light agro-waste.
21. Sarai stove-and-cooker system.
22. Pyrolysis gas stoves.
23. User friendly biogas technology.
24. Peat substitute from agro-waste.
25. New method of organic farming.

ARTI can be contacted for hands on training in these technologies and for technology transfer.

KRISHIVARADA

F3/302 Rutu Enclave, Opp. Muchhala Polytechnic, Ghodbunder Road, Thane (W) - 400 607, Maharashtra. Cell: 09821089329/ 09320089329, Email: krishivarada@consultant.com

Contact: Jilpa P. Nijasure & Prashant M. Nijasure

Fruit and vegetable cultivation, organic farming, bird & butterfly garden, landscape designing, medicinal and aromatic plants, eco tourism.

DR KUMARAPPA GOBARDHAN KENDRA

Bakuka-Nadep Experiments, Pusad – 445 204, Yavatmal District, Maharashtra. Phone: 072334 6184

Shri Pandaripande, during his time, developed a compost from gobar by a method which is three times more effective than the normal method. It is called NADEP compost and Pandaripande was affectionately called NADEP Kaka. Since the preparation of compost is labour intensive, it is ideal for landless labourers as additional source of income. NABARD has circulated this compost procedure, so that small scale viable projects can be initialted. The Centre of Science for Villages, Wardha is also implementing this package.

MAHARASHTRA INSTITUTE OF TECHNOLOGY TRANSFER FOR RURAL AREAS (MITTRA)

BAIF – Mittra Bhavan, Opp. Niwas Homes, Behind Bodhale Nagar, Nashik -422 011, Maharashtra. Ph.: 0253 2416057 / 58, Fax: (0253) 2416056, Email: mittra_nsk@dataone.in

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BAIF works in the area of regeneration of soil.

(Source: Brochure)

RAMESHCHANDRA DHIRUBHAI NAIK

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ORGANIC CERTIFICATION IN MAHARASHTRA FOLLOWING THE PARTICIPATORY GUARANTEE SYSTEM (PGS)

Maharastra has 1872 organic farmers registered through 138 farmers local groups. IIRD, OFAI and Chetana Vikas are the PGS Organic Facilitation Councils that coordinate the process of forming grassroots level farmers groups. IIRD and Chetana Vikas have 78 and 16 local groups respectively under their council and MOFF which is OFAI's coordinating agency in the state accounts for 44 local groups.

Details of these local groups and their organic produce is posted at the www.pgsorganic.in

OBITUARY: R.T. DOSHI

'Jamunotri', 26th Road, Bandra (West),
Mumbai 400 050. Phone: 022 – 6401439, Email: cityfarming@indiatimes.com

Dr R.T. Doshi expired recently. After retirement, he started working on his farm at Kamshet, near Pune. Experimentation with a number of farming practices led Dr. Doshi to evolve a simple method of farming that enables city dwellers to grow their own food on every available square inch of urban space, including terraces and balconies.

None of the innovations recommended involve high costs, nor does the farming require long hours of work. Every member of the family can be involved in the maintenance of the city food garden, including the elderly. The farm can provide the family with ample nutrition from plant sources, eliminating the need to purchase one's vegetables and fruits from the market, where inflation makes a mockery of housewives' budgets.

High-density polyethylene bags are used for the growing of vegetables and cereals (the kind used to pack 50 kg of cement or fertilisers), with a diameter of around 22.5 cm and a length also of 22.5 cm. For crops like sugarcane, bags with large diameters are essential (35 cm). Fruit trees like fig, guava and mango can be grown in bags which have a diameter from 45 to 52.5 cm. The bags must be open at both ends; hence the base of the bag must be cut open.

After selection of the appropriate bags according to size, the next step is to fill them with soil. If soil is put directly into the bags, it will fall out of the other end, which has also been opened. To prevent this, the bottom half of the bag is tightly packed with biomass of any kind. Dr. Doshi often uses waste sugarcane stalks, collected from a sugarcane juice vendor outside his house. The material is for free and sugarcane juice vendor is glad to get rid of it. Functioning as a kind of giant plug, the stalks keep the soil in the bag, but at the same time, are sufficiently porous to allow the water given to the plant, to drain out easily.

After the base is plugged, half of the remaining space inside the bag is filled with compost, either made in the house, or purchased from garden stores. At the institute compost is produced by putting cow dung, organic material and water in polyethylene bags and leaving them to break down for six weeks. Compost can be made in many ways, but the suggested method requires the least amount of labour. It is ideal for city homes since the bags are kept closed and therefore, there is little chance of them being infested with vermin or other undesirable insects like cockroaches.

Roof-top vegetable garden of the late. R.T. Doshi at Bandra, Mumbai.

The remaining space at the top of the standing bag is filled with normal garden soil; approximately 2 to 4 kilos of soil would be required for every 0.11metre square area. The bags are soaked with water two to three times and the water is allowed to dry. It is now ready for planting.

Seeds should be carefully selected. They can be taken from one's own kitchen (groundnut, cereals like wheat), or bought from the store. The important point here is how one plans the planting. The Institute recommends 'chain-planting', where plants are grown to provide for small quantities of vegetables at staggered intervals and not a large quantity at all once. Seeds, cuttings or grafts can be placed in the bag and with the right amount of watering they begin to take root and flourish. Seeds may be placed 1.5 to 2 cm below the soil level and three weeks later, the plant would have fully emerged from the soil. Leaves may be given foliar sprays and pests should be dealt with using non-toxic, home made solutions as far as possible.

Water use in this so-called 'Doshi System' is also considerably less than in conventional soil farming. Since the plant grows in sealed bags or other cylindrical bags or containers, considerably less water is needed when compared to growing on fields, where most of the water would evaporate.

The system is suitable for any scale of operation and in any open space. Dr Doshi uses these bag systems to grow a variety of fruits, vegetables and cereals. He has also grown 10,000 sugar cane plants. Both small and large farmers can use this method, since it is easily replicable and depends, very much, on materials available in the local environment.

Dr. Doshi's good practices could have a significant impact on policies relating to food production. Today, most governments have fallen into the trap of re-allocating all the food production to the countryside. New policies supporting such forms of urban agriculture should now be encouraged.

Urban farming brings health and other benefits (including recreation and physical exercise) to city folk. Farms of the kind promoted by Dr. Doshi can also reduce food prices. Even if the vegetables and fruits produced are not destined for the market, their availability to households in the cities can help to reduce food scarcities.

Interview with Vikram Bokey

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Claude Alvares: Mr Bokhey, my colleagues and I in the organic farming movement are very curious to know why an Indian Police Service (IPS) officer like you should have resigned his job and taken to promoting organic farming. What made you take this drastic step?

Vikram Bokhey: In my childhood I spent all my holidays and vacations in villages. The rural India I saw as a child no longer exists. During my years in service, I would go to my native place, my village, for holidays. I used to see the pathetic condition of my childhood friends, neighbours and relations, people with whom I had spent days and days together. Their condition was absolutely pathetic because each and every family was in debt either to a bank or a moneylender.

I used to move up in the ranks every second or third year in the IPS. But a time came when I started feeling ashamed of myself and wanted to do more for my own community, especially the welfare of the farming community which is the backbone of the Indian society. By being in the IPS, it was not possible. So I took the decision of quitting the IPS and working full-time for the welfare of the farmers. I am now trying to work on prventing the suicides of farmers, which is my first mission in life.

CA: How many farmers have committed suicide in Maharashtra so far? Are the figures well documented and are the farmers doing conventional farming?

VB: 1100 plus have committed suicide. This is all well documented. All of them were from conventional farming or dry-land farming – rainfed. We have formed an alliance i.e. Mr.Prakash More from Yeshonnati, Mr. Manohar Parchure from Nagpur and MOFF. We have analyzed the cause of every suicide and you will be surprised to know that every farmer has committed suicide because he is in debt and cannot pay back the loan. That is the reason.

CA: To get back to your decision to quit – which year was this?

VB: I quit the IPS in 2000. I joined the service in 1980 and after 20 years I decided to quit.

CA: Your colleagues did not try to dissuade you?

VB: Everybody tried to dissuade me – my colleagues, my family, my friends.

CA: So you took this plunge totally into this new area of work.

VB: Absolutely. In 1998 I was posted as Superintendent of Police, Parbani District and for some months I stayed in the campus of Agricultural University and I used to take a stroll in the evenings with the Vice-Chancellor, Dr.Charudutt Mayan. I somehow did not agree with the farming practices that were carried on by the university there. I used to ask him a number of questions because I knew that something was going drastically wrong somewhere.

Vikram Bhokey

That was the time when the University of Parbhani, MKVD and the Government of Israel were doing a joint project on 100 acres of cotton. This was a very high tech farming – drip irrigation and dry. The university spent a lot of money. There was a young boy from Israel staying at Parbhani who was the chief coordinator for the project. And the project failed miserably. They had spent so much of money. I think they were trying BT cotton. When the results came out, I spoke to the VC and he had no clue at all. There was no output at all.

The conventional farming, which is low-cost farming and no-loan farming, was doing much, much better. In a democratic set-up like India, the common gentry believe in and have total faith in what the government says. Whatever the government has been saying for the last 25-30 years, the farming community takes it straightaway, without questioning the government's intentions or the quality of the services that the government has to offer. This has resulted in 20,000 plus number of suicides of farmers all over the country, including Punjab and Andhra Pradesh, which is a sad state of affairs.

The Agricultural Revolution, which started in the late '60s and which took the shape of the Green Revolution later on, became the money-spinning activity for quite a few - at the cost of the farmers. This was a very sad state for the agrarian community of India.

CA: How did you gain the confidence of the farming community? As an IPS officer of the State bureaucracy to suddenly come into the group in favour of the farming community, how did you gain the confidence of the people?

VB: During my 20 years of service in the IPS, God was kind and I earned a very, very good name. I did not allow my name to be tarnished at all in the service and deliberately I never did injustice to anyone, even to a visitor, as a SP of Pune district, SP of Parbhani district, as Regional SP of Belgaum district, as SDP of Pandarpur, as Commandant of the SRPF or as SDP of the Railways. I ensured that whosoever comes to me is given legitimate help, legal help, at any cost.

People have faith in me. People in Maharashtra have faith in me. Even today, I go and say to them, 'As an IPS officer in the district, I have never taken you for a ride, never cheated you, I have never misled you, never done injustice on you. Now there is no reason for me to do it. I have come to talk to you not as an IPS officer, but as your colleague, as your friend.

This is what the fact is. This is what should not to be done and this is what must be done.' They have taken me for my word and I am very proud of it.

I am very proud that MOFF has settled down very correctly. I am very happy about one thing that whatever is the first level of decision-making authority of the MOFF, the body of the MOFF, we have tried and tested everybody – the Advisory Committee, the main Trust of MOFF, the Apex Council, which are the three tiers of MOFF - everybody has been tried and tested and everybody's intentions are sincere and genuine. And their dedication is par excellence.

CA: It has been 5 years now that MOFF has taken of the ground?

VB: MOFF has been registered about two years ago.

CA: But you must have done a considerable amount of work much before you registered it.

VB: Absolutely. After I quit the IPS, we formed a small trust called the VB Foundation. We started to work in the field of organic farming. While doing so, in the year 2002, we realized that there are quite a number of people like us who are doing something concrete in this line or field in the interest of the common farmers without any selfish motives. Subsequently we found a need and we i.e. Dr. Suresh Kumar Goel, who is our outstanding Commissioner of Agriculture and I came to a conclusion that we need a body which is a federation of all the NGOs and all the individuals who are working in this field. That's how MOFF came into existence. Today 150 NGOs and over 1,75,000 farmers are in MOFF.

CA: Does the government support you in all this?

VB: With all their good intentions, so far there is hardly any support and in spite of the fact that we have such a wonderful Commissioner of Agriculture, nothing much has been done in this field.

CA: Is this because the chemical and fertiliser powers are very strongly entrenched?

VB: Absolutely. That is the only reason. Second, the politicians in a democratic system, who are the final-decision making people, have been taking us for a ride. The politicians with the IAS lobby, which is working like stooges of the politicians, and their agents all over have formed such a nexus that it is very difficult for people like you and me who are working in the interests of the common farmer and the resource-poor farmer. I always say it is like an unequal battle between the two forces – the MNCs, the fertiliser-insecticide-chemical lobby and their agents in the government, their agents in the bureaucracy and...

CA: And in the scientific community.

VB: Also in the scientific community. The scientific community is a washout in this country.

CA: They have nothing to do except to implement what has been proposed by the multinational corporations. If you ask them to teach you about organic farming, they don't know anything. They only know about chemicals. They are now beginning to be the biggest force opposing organic farming because organic farming is based on a theory of knowledge which does not use chemicals and pesticides at all. So they find themselves totally redundant in this new thing.

VB: Absolutely, I agree with you. In fact, being the paid servants of the government, they always go by what the government's thinking is. As I said earlier, in the wretched democratic set-up that we have, it is only the political will that matters and you know the quality of the politicians. They have been ruling us for the past twenty years or so.

CA: Yes but you don't have to make any comment at all. But tell me about the extensive organisation that you have built up and the contact network that you have with all the farmers. What is the true scope for organic farming becoming mainstream farming in Maharashtra?

VB: It's a tall order. It is difficult day by day. People have realized they have been taken for a ride by the chemical lobbies and others supported by the government. In Maharashtra there are 18,000 people working in the Department of Agriculture. So just imagine the strength. For the last 20-25 years or so, they have been propagating only the cause of chemical farming. So just imagine the disaster that has been caused to agriculture in the State.

CA: If that system could be used for promoting organic farming, then Maharashtra would be far ahead because you have got good theoreticians, you have sufficient number of people who are competent in the principles of organic farming like Manohar Parchure and so many others and you don't need further guidance or anything of the sort.

VB: Actually, if you see, we have over 5000 years' legacy of farming but for the last 40 years, we have deliberately forgotten it. We have changed to a new course of action in the field of agriculture, which has been the root cause of disaster to all of us. And it is not only the rural India that is going to the dogs, but it is the urban gentry also. There was a survey conducted by some agency in Delhi, wherein it was found that 40 per cent of school children are suffering either from blood sugar or blood pressure and the number was 22 per cent in Bombay. Twenty-seven per cent of the males in India were said to be impotent and 30 per cent of women who, during the course of pregnancy, were bedridden or advised bed rest due to discharge or (because they were) haemorrhaging. If this is going to be our future, it is absolutely stark.

CA: As part of this series, we had an interview also with Dr.S.G. Kabra from Chandigarh and he gave us a revealing and disturbing interview about the impact of pesticides over the past 40 years in the Green Revolution areas. It makes you terribly agitated to see the impact on women's health, on women's reproductive health, on children born without brains and people with everything intact but they are not able to function because their motor abilities are all in disarray and he has traced it all very carefully to the use of synthetic poisons. The data is very well known but no body knows how long the system is going to take to recognize the impacts.

Tell me, as a last, concluding question, what is now lacking to get organic farming to move in Maharashtra as a whole? What are the things we should put our energies into and what do you think MOFF should be putting its energies into in the coming years, provided funds are available of course.

VB: The biggest part is the political will because they do not understand what they are doing and what they are toying with. What MOFF wants is – and it a unanimous decision of over 150 of us, at the top level of decision-making of the organization – that unless we come together and unless we reach out to the farmer, it is not possible.

It's a very tall order as I said earlier. It is a battle between two unequals and our unity would be our strength. We are trying on those lines. We are not hopeful about government funding because the political will is totally contrary to what MOFF thinks. It's a very unfortunate thing but it's a fact.

CA: You should be the best person in the circumstances because you come from a rural background but your life has been spent in the city. People see you also as an eminent middle class person who is able to interact with the farming community because you are able to build a bridge between people who consume agricultural produce and people who produce it.

VB: That is exactly what we are trying to do. Last year we supported an outlet at the Ferguson College, in the main area in Pune. We are trying to give it all the logistical support and we are trying to open outlets like that all over. Now at the 190 organic schools in the state, we are trying to turn them into a vibrant body which will impart training on organic farming. They will not only produce whatever grows in the area but there will be outlets to sell the organically produced stocks. MOFF intends to have 1,750 such organic schools across the state in the near future so that these centers are created that are not only imparting training but also selling the finished products.

CA: So that they can be self-sustained.

VB: Absolutely. That is the motto - employment generation and sustenance.

CA: It's a great dream and a great idea and Mr. Bokhey, I wish you all success.

Biodynamic in Beed

Beed Taluka in the Marathawada region has emerged with a high degree of biodynamic activities under the guidance and supervision of Mr. P.G. Kulkarni Taluka Agriculture Officer Beed and his field staff. Cow Pat Pit(called Kamdhenu Sidhi-3) was planned and carried out through Women's self help groups, Krishi Vigyan Mandals and farmers and more than 150 Qts of Cow Pat Pit was produced. Several farmers are recycling their farm wastes into quality compost using the product, applying on soil during evening hours to make their soil living and using it for seed treatment. Demonstrations of BD-501 and BD-500 were conducted on farmers' fields. Use of liquid manures as better substitute for chemicals is now routine in Beed. The farmers are looking towards biodynamic methods as boon for saving undue expenditures incurred through external costly chemical inputs.

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(Source: Brochure)

Western India

Rajasthan

Interview with Arun K Sharma

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Dr. Arun K Sharma is a man with an 'opinion'! You may not make it into his good books if you happen to call the traditional agricultural practices in Rajasthan as 'default' organic. His contention is that the word belittles the centuries old wisdom and tradition of locally fine-tuned resource based farming and would rather it be termed 'designed organic.'

Dr. Sharma is the author of two books, *A Handbook of Organic Farming* and *Biofertilisers for Sustainable Agriculture. Jaivik Kheti-Sidhant, Takneek Evam Upyogita* are books written by him in Hindi for farmers and extension workers.

OIP: In the mind of an average Indian, especially one from the south, Rajasthan is written off as a land of deserts. Could you throw some light on the agricultural scene and in particular the organic agricultural practice there?

AKS: Rajasthan, the largest state in India can be broadly categorized into five agro climatic zones. Most of the rainfed area in western arid and eastern and southern semi arid parts are designed organic which accounts for about 80% or approximately 4.0 million hectares. Course grains, spices and medicinal plants of these areas are known for their good quality. However, in canal and tube well irrigated areas, use of synthetic inputs are as high as in irrigated areas of other parts of the country.

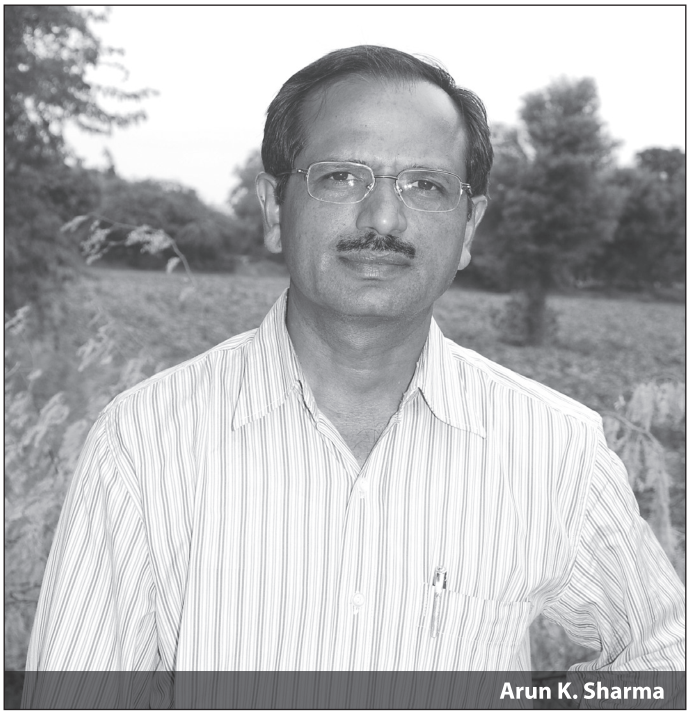
In the 80% area that is designed organic or organic by tradition, there is immense possibility for improvement of technique and enhanced production. There is much going in its favour, for e.g. the area already has a rich traditional farming knowledge base, organic inputs like animal manure, biopesticides, natural minerals (rock phosphate, gypsum) are easily and readily available.

Promoting organic methods in rainfed small land holding areas is sure to receive immediate acceptance, more so in the back drop of mitigating the effects of drought and erratic rainfall patterns. And in irrigated areas, people will eventually have to opt for organic methods as the soil fertility has been already severely affected, the water table has receded to dark zone and the canal water availability is decreasing steadily.

OIP: Is there any conscious effort to promote organic practices, are there difficulties for farmers wanting to convert to organic?

AKS: There are many agencies and individuals promoting organic farming in these areas, however low literacy, poverty and leased farming are some of the bottle necks to their success.

Some other problems faced by farmers are:



Arun K. Sharma

- Insufficient availability of modern organic inputs like biofertilisers, pheromone traps biopesticides.
- High cost of compost/vermicompost and no quality assurance.
- Low support by Government during conversion.
- Market support is still in its infancy. Some of the national level organic marketing agencies mandate certification.

These complexities are an impediment in the arid zones apart from which policy and research support too is inadequate.

Given the steadily rising demand for organic, there is a need for integrated efforts. For example developing a package of organic practices may not be much effective until and unless promotion policies and good market facilities are put in place.

An integrated action plan at four levels may be required to be considered in the area of policy, research, market and production.

OIP: Could you please elaborate your views on each of these?

Policy plays a major role in promotion of any programme. Appropriate and progressive rules and regulations, subsidies, facilities, allocation of budget and personnel is quite sufficient if executed properly. The best example is Cuba in Latin America, where organic farming was made a national policy and now the entire country is organic. Similarly some of the states like Uttrakhand, and North East Region have taken the lead to declare themselves as organic states.

Although in India, the organic movement was started in the early 1980s, it gained momentum only after 2001 when the

Govt. launched the National Programme on Organic Farming (NPOF), consequent to which some Govt. agencies have started to give priority to organic farming. However, simply allocation of a budget, subsidies etc. do not seem to be sufficient to promote organic farming, as least development is seen in arid and semi arid areas even though they are given the status of Priority I and II in NPOF.

For better development of organic farming in rainfed areas, additional measures need to be taken. If one were to list them, they would broadly be as follows:

Priority to be given go organic farming in ongoing programmes. Organic farming need not be promoted in isolation, but can be integrated into all rural development programmes e.g. Watershed Mangement, Swarnajayanti Gram Swarozgar Yojana (SGSY), Food Security Mission, Horticulture Mission etc.

Popularisation of organic farming without compulsion of certification: In rainfed areas farmers are very poor and unable to afford the cost of certification. Promoting organic farming with the compulsion of certification has made negative impact on adoption. Instead, in the initial stage, organic farming should be promoted for improving soil fertility, reducing cost of production and for other environmental and sustainability advantages.

Most of the agencies promoting organic farming use a piecemeal approach e.g. only vermicompost, only IPM, only INM, etc. This makes for confusion among the farmers. Since organic farming is an integrated approach for nutrient recycling, conservation of natural resources, water conservation, crop rotation / diversification etc., it must be disseminated through a holistic approach.

Individual agencies may fall short with their isolated approaches. For example, KVIC has a scheme of margin money to establish vermicompost units but they are unable to ensure the use or sale of produce of such units. Similarly agriculture department, ICAR institutes have wealth of information but are unable to provide financial support. There is a clear need to integrate the work of all such agencies.

Encouragement should be given to produce all inputs for organic farming in a decentralised manner at the local level so that not only are local resources utilised but also employment opportunity is generated at village level.

After two decades of experience of demonstration and training on dry land farming I have realised that farmers did not stop the practice of intensive agriculture till the ground water was exhausted.

Majority of the farmers in the rainfed areas apply animal and crop waste in undecomposed form to the soil, as a result, the availability of nutrients to the plants decreases and it also invites pest problems. It would be more useful to apply these materials after composting them with any of the suitable methods. These methods can be popularised and financially supported under the 'Clean Village Scheme' of the Central Government.

Provision of subsidy may be made for organic inputs to make organic produce more competitive.

Promotion of high value crops: The demand for organically grown spices and medicinal plants is increasing, this must be promoted in the various agro-climatic regions of the drylands.

Development of clusters of organic villages: Available clusters of villages of watershed programmes may be converted into cluster of organic villages by providing technical support. This will be cost effective and make the group certification process easier.

After the emerging demand for organic produce from Western countries and to some extent from domestic markets, production of organic spices, mainly tropical spices like black paper, clove, cardamom etc. has increased. However, major part of arid & semi arid zone spice produce of Rajasthan which is traditionally organic has yet to make headway.

Not only for market purposes, but also for long term sustenance of soil fertility and farmer's livelihood, basic understanding and principals of organic farming should be applied in the production system.

In rainfed regions, main emphasis should be on efficient use and recycling of limited natural resources.

OIP: How did you come into this unique understanding of the agricultural practices and the possible solutions to take Rajasthan towards turning into an organic state?

ASK: In 1991, after my post graduation in Agriculture, I joined the Agriculture Research Service of Indian Council of Agriculture Research (ICAR) at Central Arid Zone Research Institute (CAZRI), Jodhpur. During field visits I found people practising the highly resilient traditional farming system that sustained life in this frequently drought prone desert region. Since no chemical fertilisers were in use in these traditional systems, scientists and policy makers referred to these methods of farming as 'default organic'. This made it seem as though people are not intelligent and are ignorantly practicing this locally-conserved, resource-based farming. I believe that these farming methods which the farmers have developed through centuries of experimenting and experience should instead be termed as 'designed organic.'

OIP: What are the essential elements of this system that you refer to as 'designed organic'?

ASK:The essential elements of this system are:

- Trees/shrubs are grown on the farmland to provide food, shelter, fodder, fuel, even during drought when crops fail.
- Mixed cropping of food grains, legumes, oilseeds. The use of native seeds that ensures a regular food supply even in the face of erratic rains.
- Rotation of fallow lands to restore soil fertility.
- Rainwater conservation in farm ponds.
- Cattle as an essential part of the system to provide milk, draught and manure.

OIP: And has this system been self sustaining and ensured food security to the region?

AKS: The system was self sustaining but the intervention of modern agricultural technologies like tractor, canal and tubewell irrigation, hybrid seeds and fertilisers, etc., disturbed this fragile farm ecosystem to a great extent.

OIP: What would be the best approach to neutralise this trend so to say?

AKS: One has to start working to find solutions close to natural and traditional systems, so I decided to work on 'Addition in Tradition' and developed or rather refined the following three near-to-nature technologies.

Tree establishment with integrated micro-catchment: The tree is the keystone of arid zone life but establishment of tree is very difficult. The technology developed with micro-catchments (for rainwater harvesting), organic manure, pond silt and localized nursery, has shown 85-90% survival and 2.5 – 3 times higher growth rate.

Introduction of medicinal plants: Demand for medicinal plants is increasing but supply from natural resources is decreasing. Medicinal plants are drought hardy but need organic input for quality production. Therefore their introduction into the farming system gives both economical and ecological returns. One such plant Senna (Cassia angustifolia) has been successfully introduced in the farming system of arid zone. Besides several weeds with medicinal value can be harvested instead of being killed with weedicides.

Organic agri-horticulture system: A system of intercropping Ber (Ziziphus mauritiana) a fruit bearing shrub with legumes has been developed. This system is based on harvested rainwater, recycling of organic matter and synchronized life cycle of components. Pest management is done with application of neem cake and spray of cow urine and neem leaves extract to the soil.

OIP: Have these near to nature designs been disseminated to a larger community of farmers?

AKS: We have been involved for a long time in Rajasthan in farmer trainings, workshops, research etc. etc. and very recently the Rajasthan Organic Farming Association has been established as a formal body that I hope will take the work forward given its greater collective strength and enthusiasm.

RAJASTHAN ORGANIC FARMERS ASSOCIATION – ROFA

Although organic farmers have been meeting regularly and promoting organic techniques in Rajasthan for the past four years, ROFA an official body was recently constituted on Jan 10, 2009 in Jhodpur. Presently it has 21 members from across the state. The activities of the group is being coordinated by Jagrati Sansthan, Jhodpur.

(Address details same as Jagrati Sansthan below)

(Source: Arun K Sharma)

JAGRATI SANSTHAN

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Is engaged in demonstration of organic farming techniques, capacity building and group cultivation through self help groups,

Contact:Joraram Khoja, Secretary

(Source: Arun K Sharma)

GRAMIN SWABHIMAN SANSTHAN

Post Jhadeli via Deh Dist. Nagaur -341022, Rajasthan. Ph.: 01583-278250, Cell: 09413369180, Email: gramin_swabhiman@hotmail.com

This is a group of 1500 organic producers of pulses and spices.

Contact: Ramdhan Potalia

(Source: Arun K Sharma)

AMBUJA CEMENT FOUNDATION

Post Rabariavas, Th. Jaitaran, Dist. Pali, Rajasthan. Ph.: 02939-288277, Cell: 09929590765, Email: acf_rabariywas@yahoo.co.in

An NGO working in capacity building through demonstrations and trainings in organic farming in 8 village clusters.

Contact: Rajendra Singh Katediar, Project Coordinator

(Source: Arun K Sharma)

RAMESHCHAND RANKAWAT

Village - Katyasani Teh. Merta City, Distt. Nagaur, Rajasthan. Cell: 09414342215

Grows organic spices and food grains.

(Source: Arun K Sharma)

SAHIRAM VISHNOI

C/o Raju Kirana Store, Palli Phanta, Via Lohavat, Dist. Jodhpur 342302, Rajasthan. Cell: 09799708485

Organic farming of spices and medicinal plants using tube well irrigation.

(Source: Arun K Sharma)

KARNI ORGANIC FOOD

44, Balaji Nagar Opp. Pal Balaji Temple, Pal Road Jodhpur -342003, Rajasthan. Ph.: 0291-2000866, Cell: 094144-77877

Producers of organic spices and wheat. They run a sales counter of organic produce, are presently also developing a colony of 90 houses in a village, based on natural life style principles with provision for growing organic foods to meet resident needs.

Contact:Jitender Dewal

(Source: Arun K Sharma)

CHAIN SINGH JODHA

Village Balada, Via Ambuja Cement Rabariavas, Teh. Jaitaran, Distt. Pali, Rajasthan. Ph.: 02939 289213, Cell: 09799009650

Jodha has a biogas plant and vermi compost unit. He farms organically, apart from providing free consultancy services to farmers in organic farming of grain and spices.

(Source: Arun K Sharma)

MADAN LAL DEVRA

Aditya Agro- Biotech, Post Nimaj, Distt. Pali - 306303, Rajasthan. Cell: 09214661762

Certified organic farmer. He is processing arid fruits with solar driers. A good model of organic farming.

(Source: Arun K Sharma)

जागृति संस्थान
जैविक कृषि प्रशिक्षण कार्यक्रम
आपका हार्दिक स्वागत

Organic farmers training workshop in progress.

RATAN LAL DAGA

Radhika, Ummed Club Road, Jodhpur-342006, Rajasthan.
Cell: 09414125193

Agriculture graduate and leading farmer of Jodhpur. He is converting the 50 ha farm into organic gradually. Very good model of drip irrigation.

(Source: Arun K Sharma)

KAMLESH CHAURISHIA

M/s Kapila Krishi Vihar, Hospital Road, Baran, Rajasthan.
Cell: 09829656550

Promoter of organic farming in two villages with 150 farmers growing coriander, soyabean and wheat.

(Source: Arun K Sharma)

OMGIRI GOSWAMI

Village Paladi Ranavata, Teh. Bhopalgarh, Dist. Jodhpur, Rajasthan. Ph.: 02920-215225, Cell: 09460433325

Is an organic farmer of vegetables and spices and has developed a low cost onion store house.

(Source: Arun K Sharma)

GAJENDRA GAHLOT

23-24 Ramohala, Out Side Nagouri Gate, Jodhpur, Rajasthan. Ph.: 0291-2546299, 09460007790

Is converting his 15 ha farm gradually to organic for vegetables and spices.

(Source: Arun K Sharma)

SOCIETY FOR ORGANIC AGRICULTURE MOVEMENT (SOAM)

26 Gayatri Nagar-B, Maharani Farm Durgapura, Jaipur 302015, Rajasthan. Ph.: 0141-2706000, 0141-2761679, Cell: 09414322527

SOAM promotes organic farming, provides policy support and is implementing several projects based on organic farming.

Contact: Hari Mohan Gupta, Director

(Source: Arun K Sharma)

MANISH CHOUDHARY/ KAILASH CHOUDHARY

V. Kiratpur, Post Kasli Th. Kotputli, Distt. Jaipur, Rajasthan.
Ph.: 01421-215560, Cell: 09829083117, 09829421294

Leading certified organic farmer, having good modern processing units for organic fruits & spices. Good demonstration farm.

(Source: Arun K Sharma)

KRISHNA KUMAR JAKHAR

V. Hetrampura P. Dhaba Teh. Sangari Distt. Hanumangarh, Rajasthan. Ph.: 01499-280555, Cell: 09414091200

Jakhar is doing zero budget farming (Palekar's method) of fruits and food grains.

(Source: Arun K Sharma)

VIJAY BHADU

V&P- Amarpur Rathan Th. Pili- Banga Distt. Hanumangarh, 09414095789, 09214201489

Practices zero budget farming (Palekar's method) of fruits and food grains.

(Source: Arun K Sharma)

INSTITUTE OF RURAL AND AGRICULTURE DEVELOPMENT

Director, 504, Seema waton Ki Dhani Hasnpura- C, Jaipur-06, Rajasthan. Ph. 0141-3214142. Cell: 09414331519

IRAD has several projects on capacity building and demonstration of organic farming. They also are suppliers of earth worms and other organic inputs.

(Source: Arun K Sharma)

KANHYA GOSHALA

Pal gram Pal Road, Jodhpur -342003, Rajasthan. Ph.: 0291-2742572, 0291-2434166

This is a cow shelter for 700 cows, producing and giving trainings on composting and bio-pesticides. Good demonstration of composting and bio gas plants with one tonne compost production per day.

(Contact: Sh. Gulecha)

(Source: Arun K Sharma)

HARPINDER SINGH and SURENDRA SHARMA

Post Box No. 5, Hanumangarh Junction Distt. Hanumangarh, Rajasthan. Ph.:0155-2212177, Cell: 094143230994, 09414328269

Represent a group of 20 farmers in canal irrigated area who came together three years back (in 2006) and started organic farming collectively.

(Source: Arun K Sharma)

LAKSHYA ORGANIC

Tonk Road, Jaipur, Rajasthan. Cell: 09413050380, 09887954168

This is an organic service provider company working across Rajasthan.

(Contact: Kamlesh, Director)

(Source: Arun K Sharma)

ONE CERT ASIA

Plot No. 8, Pratap Nagar Colony, Near Glass Factory, Tonk Road, Jaipur 302 017, Rajasthan. Ph.: 0141-2701882, Email: info@onecertasia.in, Web: www.onecertasia.in

A certification agency working in and outside Rajasthan.

(Contact: Sandeep Bhargav Director. Cell: 09414063456, 09414485777)

(Source: Arun K Sharma)

RAJASTHAN ORGANIC CERTIFICATION AGENCY

3rd Floor Pant Krishi Bhawan, Janpath, Jaipur 302005, Rajasthan. Ph.: 0141-2227104, Cell: 09413385482

A Rajasthan state Government certification agency approved by APEDA, working across Rajasthan

Contact: M.C. Tewari

(Source: Arun K Sharma)

RAJASTHAN GOSEVA SANGH

Tok Road Durgapura, Jaipur, Rajasthan. Ph.: 0141-2551310, 01412545954, Cell: 09784178906

An association of 500 cow- conservation centers (Goshalas) producing compost, biopesticide, electricity, biogas and medicines of panchagavya.

Contact: Prakesh Sethi

(Source: Arun K Sharma)

JAIVIK KRISHI KENDRA

Near Kenra Bank, Dhan Mandi Road, Shri Ganganagar, Rajasthan. Cell: 09414947823, 09414947824

Service providers, sale of organic inputs and promoters of collective organic farming.

Contact: Mukesh Kumar and Manjo Kumar

(Source: Arun K Sharma)

SANGRAM SINGH KARD

Mukund Krishi Sansthan, Vi. Badanpur, Post Chetavala, Via Jatpur, Distt. Jaipur, Rajasthan. Ph.: 01423-235324, Cell: 09314643723

Organic farmer and chairman of Rajasthan Kisan Association

(Source: Arun K Sharma)

SHRI GODHAM ANANDVAN

Pathmeda Taluka Sanchore Dist. Jalore, Rajasthan. Ph.: 02979253101, 02, 09, Cell: 9414154706

Biggest Goshala in Rajasthan and Gujrat having 60,000 cows, producing all cow based products like compost, medicine, etc.

Contact: Poonam Rajpurohit

(Source: Arun K Sharma)

MANAV KALYAN SOCIETY

Shivambha, H. No. 12. Road 5 Panchvati Udaipur, Rajasthan. Ph.: 02942411895, Cell: 09413318952

Working with 450 members from tribal families on conservation of traditional food, small scale processing, medicinal species and pulse crops. Good demonstration for tribal and hilly area organic farming.

Contact: Madan Nagda

(Source: Arun K Sharma)

DEPARTMENT OF HORTICULTURE

Rajasthan Govt. Pant Karishi Bhawan, Jaipur, Rajasthan.

Implementing various programmes in organic horticulture, providing subsidies under National Horticulture Mission (NHM). A cluster of 50 ha. area is to be developed as certified organic for vegetables, fruits and spices. The department is also executing schemes of the Spice Board for organic spices.

Contact: Director

(Source: Arun K Sharma)

RAJASTHAN KISAN SANGATHAN (RKS),

35 Dhuleshwar Bagh, Sardar Patel Marg, Jaipur – 302 001, Rajasthan. Ph: 0141-364759, Email: rajkisan@datainfosys.net (Contact: Srilata Swaminathan)

RKS is working among poor farmers, landless and bonded labour to fight against the anti-peasant policies of globalisation and privatisation. It is committed to working for the redistribution of land, alternatives to 'modernisation', corporatisation and chemicalisation of agriculture that is creating ecological havoc, growing dependency on MNCs and the steady loss of control and sovereignty over inputs, production and distribution. RKS is affiliated to the All India Kisan Sangarsh Samiti. (Source: Communication with OIP)

DEVI LAL VYAS

Director, People's Education and Development Organisation, Village & PO Mada, Dungarpur District – 314 001, Rajasthan. Phone: 02964 6128/ 02964 6129, Fax: 02964 3019

Devi Lal Vyas is working with 200 tribal women in organic vegetable cultivation. He is experimenting with tribal, traditional herbal pest control methods. He has prepared a training guide on organic vegetable cultivation.

(Source: Communication with CSE, 1993)

HEERA LAL PATEL

Director, Grameen Vikas Sangathan, Village & PO Ghadmala, Via Kanba, Dungarpur District – 314 804, Rajasthan.

Heera Lal Patel is working with 55 tribal women in organic agriculture in Bicchiwara Block and is experimenting with tribal herbal pest control methods.

INTERNATIONAL SOCIETY FOR NATURE FARMING (ISNF)

Department of Agronomy, CCS Haryana Agricultural University, Hisar – 125 004. Fax: 01662 – 34952.

ISNF is active in the promotion of organic farming and promotes dialogues and discussions through workshops and seminars. It publishes a bimonthly magazine in Hindi called 'Prakritik Kheti.'

(Source: Prof. I. S. Hooda in a personal communication to OIP).

DALMIA RESEARCH AND HEALTH CARE SANSTHAN

Gokul Kham – Shri Goshala, Pilani – 333 031, Rajasthan.

(Source: Communication with OIP)

RAVI AGRAWAL

Project Coordinator, Gandhi Manav Kalyan Society, 23-C Madhuban, Opp GPO, Chetak Circle, Udaipur -313 001, Rajasthan. Ph: 0294 – 2421678, Email: mksudr@rediffmail.com

We are practising organic farming in our 16 acres farm named 'DHARAMITRA' in village Ogna in tribal block of Jhadol Tehsil of Udaipur district of Southern Rajasthan.

(Source: Communication with OIP)

DR VIJAY SINGH

Director, Department of Rural Technology, J. R. Nagar Rajasthan Vidyapeeth (Deemed) University, Pratap Nagar,Udaipur-313001, Phone: 0294-2492441/
Cell: 9414063460/9414168515

KAILASH CHAUDHAR

Village Kiratpur Post Kasli, Tehseel Kotputli, Jaipur – 303114, Rajasthan. Cell: 09829083117

M.R. MORARKA GDC RURAL RESEARCH FOUNDATION

Office Address :

Vatika Road, Off Tonk Road, Jaipur-303905, Rajasthan. Phone : 0141-2771100, 2771101 Fax : 0141 2770031, E-Mail: info@morarkango.com, Website: www.morarkango.com

Morarka Foundation, a non profit voluntary organization, was set up by Shri Kamal M. Morarka in 1993 to create wealth for the society through innovations in resource management and capacity building of the people. From being a successful grass-root level implementing agency for 10 years, today it is being recognized as a leading resource organization offering solutions in sustainable agriculture'.

Morarka Foundation has already assisted over 5000 small entrepreneurs and has also trained over 500 agribusiness professionals through formal and informal training and capacity building efforts. Morarka Foundation is presently implementing large number of projects for Organic Agribusiness Development in joint collaboration with many State Governments and Private Sector Companies in India and Abroad.

MORARKA ORGANIC FOODS PVT LTD

Vatika Road, Off Tonk Road, Jaipur 303 905, Rajasthan. Ph/Fax: 0141-2771100, 2770031, Cell: 094140-63462, Web: www.morarkaorganic.com

Contact: Mr. Gopal Singh Rawat

Cell No.: +91 - 98292-98121, Email: gopalrawat@morarka-organic.com, morarkaorganic.mkt@gmail.com

(Source: Brochure)

GMED

D-45, Jan Path, Shyam Nagar, Jaipur 302 019, Rajasthan. Telefax: 0141-2290439, 2297403, Cell: 09828811369, Email: rganguly@gmedindia.org

The Small Business Growth Program

Contact: Raj Ganguly, GMED Program Manager, Organically Certified Products

(Source: Brochure)

KRISHAN KUMAR JAKHAR

Farm: Hetrampur – Dhaban Teh, Sangaria, Dist. Hanumangarh 335 063, Rajasthan. Ph: 01499-280555/280468 (R), 01499-280442 (S), Cell: 09214369889/09414091200, Email: krishankumarjakhar@hotmail.com

Krishan Kumar Jakhar is an Homa Organic Agriculture Specialist.

Farm Produce: Organic vegetables, fruits, grains & pulses, cow milk and ghee, bio fertilizers and bio pesticides.

(Source: Brochure)

GREENLIFE SOCIETY

Gravis, 458 Street 3, Milkman Colony, Pal Road, Jodhpur – 342 008, Rajasthan. Ph: 0291-744549, Email: greenlifesociety@yahoo.com

Contact: Hasmukh Hoslo Jiwa, Director

(Source: visiting card)

TRILOK CH. GOLLECHHA AND KANHAIYA GOSHALA

Pal Gram, Pal Road, Jodhpur – 342 003, Rajasthan

Dr. PRABHU D. KUMAWAT

SURE, Society to Uplift Rural Economy, Gurudwara Road, Barmer – 344 001, Rajasthan.

North & North West India

Delhi

Interview: Devinder Sharma

Devinder Sharma is a journalist, writer, thinker, and policy analyst who plays a crucial role in the global effort to turn back ill-advised neoliberal trade policies and biotechnology. He quit active journalism to research policy issues concerning sustainable agriculture, biodiversity and intellectual property rights, environment and development, food security and poverty, biotechnology and hunger. Email: dsharma@ndf.vsnl.net.in, Web: www.dsharma.net.

His writings can be viewed online at www.indiatogether.org, www.countercurrents.org and www.agbioindia.org)

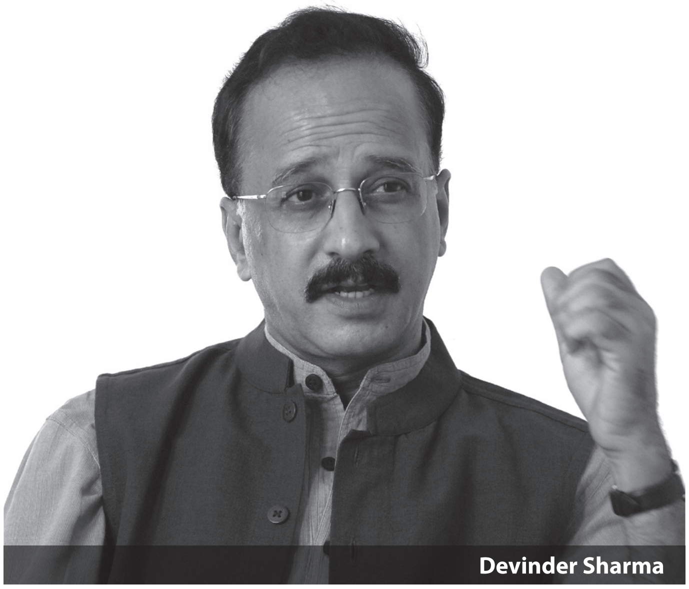
Claude Alvares: The entire country was exposed to the initiation of the green revolution in Punjab and Haryana through your frontline reports from Chandigarh in the Indian Express. *What is your personal observation today about these developments as you were there at the time when these new technologies had been introduced. What is your bird's eye view?*

Devinder Sharma: If you go back to the era of the 80s, the biggest mistake was that the model was suitable to the well-endowed regions where there is enough water. These varieties that came in were fertilizer responsive. But the scientific community tried to push them into drought regions. In India, 70% of the regions are prone to drought. The National Academy of Agricultural Sciences came out with a report that said drought areas are not only thirsty for water but they are also hungry for chemical fertilizers. Today if the drought areas are devastated as well, one reason is the green revolution model that they have introduced into the region. They tried to promote NPK everywhere. So that techno fix was the undoing of the entire agriculture activity in the country.

By the time I joined the *Indian Express* in 1981, the 'Green Revolution' was already well established and the second generation environmental impacts – the loss in soil productivity, the deterioration of soil health, the water table going down, the contamination of the environment, etc., were becoming visible.

The tragedy was the agricultural scientists did not look at it in the context of what one would call a 'midterm correction.' Like each time the Finance Minister presents a budget, six months down the line he will present something that is called 'midterm corrections' which is very important.

What the scientists did in reality was they tried to overcome the crisis – and problems that were visible – with more green revolution instead of going for midterm corrections. If your soil was not producing as much as earlier, they said, you apply more NPK. NPK became the mantra for the entire green revolution period. I call these people 'NPK scientists' as they did not look beyond NPK. The nitrogen-phosphate-potash period, that was actually what the green revolution model was. All problems could be treated with doses of NPK!


Devinder Sharma

The entire Indo Gangetic Plain belt was badly affected. I remember CGIAR (The Constructive Group for International Agricultural Research) set up a collaborative research project along with ICRISAT in Delhi to look into these second generation impacts. *The report was never made public*. But I gathered, from what they had to say, that they could foresee the crisis in food security because of the damage done by the green revolution.

But elsewhere also, if one looked around the globe, similar situations were erupting. Somehow the scientific community was helpless in that context, but eventually they were looking for a technology fix as another answer to the crisis.

CA: In your writing, you have related these issues within the country with developments abroad and the globalisation of agriculture as well. Can you give us some idea of the evolving picture?

DS: In the 1980s, when the world was witnessing a peak as far as food production was concerned, the control of food going into the hands of private business corporations. In fact, that was an incursion which started simultaneously. Also 1980s was the period when scientists cut through the genetic species barriers and went into genetic engineering. Once genetic engineering erupted, private control came up alongside. There were dialogues initiated within GATT (The General Agreement on Tariffs and Trade) that we need to incorporate agriculture into GATT. That is how the process started and then it took seven and a half years for the merry-go-round to complete.

First, these global private interests wanted to destroy India's production capacity. Second, they wanted to take control over the food chain not only in India but also in China. That could only happen if the agricultural research system – which was under public sector control – was privatized. That was the time when CGIAR – which has the international control over public sector infrastructure – also began talking about private control or public-private partnership. Today CGIAR is in control along with the private sector.

The next target was India because China is very difficult. India has the second largest research infrastructure in the world. Punjab Agricultural University has a vice chancellor who has been imported directly into the country from Cargil.

CA: Is that a result of the Indo-US Agreement on Agriculture?

DS: The Indo US-Agreement does not spell it out clearly, but it is a trend which is visible. If you look at the CGIAR centres, most of them are having people who are involved abroad. They are today with the industries and tomorrow they go back. Similar things are happening in agriculture which means the industrial control of agriculture is now getting complete.

CA: Why is faith in green revolution technology not collapsing in the face of these developments? Are we all so naive?

DS: If you look at the production this year (2008), the government of India's official figure is questionable. Since 1987, after 20 years, the production has increased. In 1987 the production was somewhere around 175 million tonnes. Today it is in the range of 210-220 million. Every year the increase is hardly around 1 or 2 million. For India, 2 million tonnes does not count. Every year India should have an increase of 7 million tonnes if it has to count. Hence the productivity is stagnating.

Yet, though the green revolution has collapsed, the argument that goes to support it is – if you look at the agricultural scientific community led by Swaminathan – he says there is a 'technology fatigue' which means that technology is not working. The point they are trying to communicate is, if it is not working, how is the production going up? The point we are trying to make is that reduction does not mean a drastic slump in production. The basis which leads to good production, to sustainable productivity levels, has now gone. The natural resource base has been destroyed. That we all accept. The natural resource base destruction is responsible for the farmers' suicides. It is possible that the farmers want to quit agriculture and move on to industries.

This is one factor which the scientific community does not want to accept. Because all these years they went on promoting NPK knowing that it was going to be destructive of agriculture. Now we are going on to a 'second phase' of green revolution which we call the 'second green revolution,' which means the scientist is trying to bypass the negative impacts of the first green revolution without drawing a kind of a balance sheet of what is good or bad and what should be done if you want to resurrect and revive agriculture. What they are trying to say is, we have more technology which will take us to the next phase of green revolution. In the process we are compounding the crisis because we are trying to push these problems under the carpet.

CA: How is official policy responsible for this crisis?

DS: One of the classic ways to examine what has gone wrong with agriculture is to take a look at the agricultural universities that came up in India: the first was Pant Nagar in UP, it came under the land grant system of education. It was supported by the USA. That system was completely transplanted into India. The entire university was transferred to India.

When I was a student of agriculture, we were given a soil science text book by Buckman & Reddy. Buckman and Reddy were living in America. They did a book on soil science which was only good for the soil at that temperature. But even today the soil science text book in India taught in the universities is by Buckman & Reddy. Year after year we are brainwashing our people with the wrong kind of education.

If you apply NPK – chemical fertilizer – the first casualty which is visible to the eye is the disappearance of the earthworm. In four hours, the lethality of the soil will rise to such a level that the earthworm will have to go. All these years we went on killing earthworms. No scientific institution raised this question – why is the earthworm getting knocked out and whether this is something beneficial or not. For 40 years now, we have destroyed earthworms. Now we are trying to bring back earthworms through vermicomposting. First you get rid of earthworms then you set up an industry to sell earthworms to farmers.

The mental approach has shifted from what exactly is good for India to what is good for the US. So we don't even like our own earthworms. If you look at the vermicompost manufacturing units, you will find the earthworms that are used are coming from Australia, Africa, China and from the Phillipines. We do not love our earthworms. When you have alien species coming into India, our earthworms have to die. They have to move out from their sphere of operation.

In other words, we did not see if the species introduced were fit for our climatic conditions or not. We simply bought up a technology and we did not bother whether it had to be corrected, rejected or disputed. We just took it and applied it.

So this is how the universities have brainwashed generations after generations. Whenever we think of agriculture we think about American culture and not Indian culture. We have lost control of our reality.

When I became a journalist in the 60s, I also came from the same school of thinking. For quite some years, I was under the impression that lab-to-land was the answer. The *Indian Express* at that time was the largest selling paper and it invested in me and made me travel around the country because at that time I was the only agricultural correspondent for the entire chain. They made me travel within the drought regions of India for three months. I travelled extensively, went to many institutes, to farmers... I was supposed to go to the nearest publication centre, sit there and file my stories. For three months I produced stories in series. It made me realise that whatever I was taught in the university was not applicable to the farming community. What we were trying to advocate to the farming community was wrong.

The mind set has not changed. The people who are into politics, into policy making today, come from the same education system. The only way to increase production, even for the great economists of this country, is talk NPK. That is why the fertilizer subsidy is amounting to Rs.1,25,000 crores. The manufacturing sector of course has a vested interest but the people who are advising the government are completely of the opinion that nothing else can sustain Indian agriculture. This thinking is at the political level, at the policy level and at the scientist level.

CA: Would you agree that the chemicalization of agriculture would not have been at all possible without the assistance of huge subsidies?

DS: In the European Union we have roughly 15 countries; there the highest subsidies go to European farmers. They have the Tescoes, the Wal-Marts and all these corporations in the retail sector. They had of course the commodity exchanges and so on. If you look at the futures trading, that was already there. In America if you look at the biggest stock exchange in Chicago, futures trading is being followed. Farmers do have computers. Yet their income was falling. If this is the model which will increase the income of farmers under the second revolution, why did it not work in America? If the commodity changes and futures trading was helping farmers, then where was the need for America to provide roughly about 95 billion dollars as subsidies to their farmers? It was clear that farming was only sustainable on subsidies.

Similar was the case of the European Union. In one of my meetings with him, Pascal Levy, the Director General, had in 2001 gone on record saying, 'Why do you want my subsidies to go?' At that time he was the Trade Commissioner of the European Union. He said, 'If I have to reduce my subsidies the condition of my farmers would be like the American farmers. They will disappear.' My answer to them was we are not bothered whether you have 7 million farmers or 70 million farmers, but your subsidies are killing *our* Indian farmers. If you want to offer subsides, please keep your agriculture protected. But if you want to keep your subsidies and still want to trade, *that is not fair*. If you look at the global scene today, they are keeping their subsidies. There has not been even a single dollar reduction in subsidies. On the contrary, subsidies have gone up today to 74 million dollars a year.

CA: What is the consequences for countries like India of such subsidies?

DS: All the developing countries today are importing food and the only places where food exports are going up is America and the European Union. So we become food dumping grounds. *Importing food is importing unemployment*. People are pushed out of agriculture. The economic thinking also goes in tandem with it. We have been told that nowhere in the world has a country grown with agriculture. Therefore we must push people out of agriculture!

In India, we have 60 crore farmers – one-fourth of the farming population of the world. If you move them out of agriculture, which country in the world can employ even 100 million of these people? We don't have the capacity. No industry can employ 100 million people. So why are we pushing them out of agriculture? Because of the corporates. The control of agriculture does not become complete till farmers in large numbers are pushed out. The WTO, the economic process, the World Bank have all joined hands to see that process is complete.

CA: How do you see India's situation in future?

DS: If you look at the situation globally, the control of food has gone into the hands of a few corporate houses. The same system is taking root in India also.

The corporates did the maximum damage with the green revolution. The US has one of the most highly devastated agricultures that we see in the world. It is sustained only because of the subsidies that are pumped into the system. If you look at American agriculture, from green revolution phase they are moving to the second green revolution which is the industrial farming system supported by the corporations of agriculture. And inspite of the huge subsidies, farmers are disappearing.

If you come to Europe you have the same model of second green revolution, which India too is now courting. The new model declares there should be fewer people on the farm. So what is happening in America in the last 60 years is now pushed onto India. So you will have the Finance Minister and Prime Minister saying there is a need for shift of population from the rural to the urban area.

In1996, Ismail Saragal, the former director general and the former chief of CGIAR came to Swaminathan Foundation in Chennai. He said by the year 2015 the World Bank estimates that the number of people migrating from rural to urban areas would be equal to twice the combined population of UK, France and Germany. The combined population of UK, France and Germany in the 1990s was 200 million which means the World Bank had estimated 400 million people in 1996 would be migrating from rural to urban areas by the year 2015.

If you look at the 2008 World Development Report, the World Bank actually lays out a complete structure of how to go about the population shift. They are saying we need to have land rentals in operation. The land has become unproductive and we have to move out to a better productive use – which according to them naturally is industry. They are saying that the farmers who do not know anything else but farming have now to be trained. They have suggested a series of technical institutes. They are saying these people should now be trained to do industrial jobs like masonry, carpentry and so on.

Independent studies, beside the World Bank studies, say that by the year 2020, 75% of Tamil Nadu should be in urban cities. Similarly for Karnataka. For Punjab the figure is 85% and Uttar Pradesh about 67% etc. This is not far away. If you look at the World Bank report, villages are becoming empty of people and the cities are becoming overcrowded. They are going to have more mega cities coming up. India by 2050 will have the largest number of mega cities in the world. So there is a migration shift taking place. Where is the food going to be produced? They have already made plans and are thinking ahead. You will have food factories. This is where India and the world are headed.

So we are preparing a generation to be available for the industrial shift. This is exactly what they did in America. Now Europe and America are part of the same system. That is what they are pushing on to India. We fail to link up those dots. If you link up those dots it is very clear that this was a kind of system for which they had already planned a strategy. They are moving ahead piece by piece. Today they have come to a stage where WTO provides a framework support to the World Bank and IMF agenda. WTO provides legal teeth to that. If somebody disobeys WTO, then you can be taken to task. There can be economic embargo. So it is a system that is installed to ensure that the world has to follow a system.

CA: Are you saying that there is no independent agricultural research now possible in India?

DS: The situation that is emerging is the takeover of agriculture itself. If the Indian Council of Agricultural Research (ICAR) remains the way it is, then our food security is still not under the control of the Americans. So the ICAR system has to be dismantled. If you consider the situation in India, there are 51 agricultural universities now. They have no money for research. Most of the universities can barely pay salaries. There is a new trend in India, that is, agricultural universities are selling off their land assets. Pant Nagar University has already sold much of its land to private corporates. Jabalpur University is selling its buildings now. The Punjab Agricultural University is trying to sign MOUs with Syngenta and Monsanto to sell their laboratories to them. It is a takeover which is very clearly happening.

So when you see the Indo US initiative, it is a natural development that you have to see because first you brought in the National Agricultural Technology Mission – a technology programme under which you brought in Rs.1,200 crores borrowed from the World Bank. Then we change it into a National Innovation Programme. There too we are spending more money into pushing for the American system of technology including genetically modified crops. This is happening under the garb of research infrastructure. Research infrastructure is privatized and getting under the control of companies. The Indian policies are being designed by McKinsey and Ernest and Young. If you look at global policy, they are trying to push farmers out and hand over control to the corporate.

You can't blame the political masters. The blame rests with the economists as well as scientific communities because they are the policy makers and they have to feed the nation. If they were to advise the Prime Minister that this is the model for a country's future, the Prime Minister would look at it.

CA: But the Prime Minister himself is an economist.

DS: I had a discussion with the Prime Minister on agriculture. One of the things he said was, you are saying that chemical fertilizer should be taken away. But our scientists say that we cannot do without chemical fertilizer. These advisors if they were to give the right advice to the Prime Minister, he would accept the advice. But these are the persons who are giving the wrong advice and that is where I blame the economists and the scientists. Economists are supposed to know better and if you look at the prominent economists of this country, they speak the same language as what the West wants.

Today the entire financial model has collapsed. Did anyone point out towards the failure of the market or that the market was not the perfect growth model. It is the economist and the scientist who have failed. Politicians would still listen to you if you had given them the right advice. Knowing politicians, they have to come back to the people after five years but the economist is not answerable to anyone and is operating under a completely derived theoretical frame work which is imbibed through their education system.

CA: Does this country then have any hope?

DS: If you look at WTO, it is the biggest power house and all multinational corporations and government are behind it. Yet they have not able to achieve what they wanted to achieve ten years back. It gives one hope that people's resistance can change things. But the tragedy is, it took 10 years for WTO to become a common household name in India. When they bring in FDA, it will take another 10 years to realize its implications, by the time, the damage will be done.

In the end it boils down to basic rules. Can the earth take this, can the water take this, can the environment take this? Sea level rise, the temperature rise – all indicate that the climate can't take it. On one hand, all the aggregation of resources is going on. On the other hand, the natural system is on a decline. A UN report says that the natural resource base is not regenerating. There is deceleration. What is the premise of this huge project that is erected through World Bank and international cooporation. What is the capacity of the ground to retain the structure? None whatsoever.

We are heading towards a crisis situation. We are not on the right path. When people ask me if there is hope, I tell them, there were people like Mahatma Gandhi who took up the challenge. A society with umpteen numbers of people building up mass struggles, when they join hands, things will change.

Organic Promoters

ACTION FOR FOOD PRODUCTION

25/1-A Pankha Road, D-Block, Janakpuri, New Delhi-110058. Ph.: 011-28525452, 28522575, 28525412 Fax: 011-28520343, Email: afprodel@afpro.org, ed@afpro.org, Web: www.afpro.org

Action for Food Production is a four decade old socio-technical NGO working for the development of the rural poor through effective natural resource management solutions.

It provides technical guidance and backup support to grassroots level NGOs for the implementation of environmentally sound projects for water, food security, livelihoods, forestry, fisheries etc.

Head officed at Delhi, it reaches out to communities throughout India, particularly small and marginal farmers, the landless, tribals, and others having urgent needs through nine field units located strategically at Guwahati, Ranchi, Raipur, Bhubaneswar, Hyderabad, Bangalore, Udaipur, Gwalior,Ahmednagar

It has a team of hydrologists, geologists, geophysicists, civil engineers, sociologists and specialists in agriculture, fisheries, forestry and livestock whose expertise is readily made available to seekers.

Some of its services of use to Organic Farmers are:

- Water Resources Management
- Hydro-geological Surveys

- Water Yield Testing
- Bore wells, tube wells, and hand pumps
- Minor Irrigation- Drip irrigation, lift irrigation
- River barrier (Dykes) and Diversion channels
- Small dams and other water conservation structures
- Gravity Flow Systems
- Horizontal Roughing Filter – Slow Sand Filter
- Rooftop Rain Water Harvesting
- Promotion of Indigenous technology
- Revival of traditional water management and harvesting structures
- Land Husbandry
- Sloping Agricultural Land Technology (SALT)
- Dry land farming technology in arid to semi-arid regions
- Wasteland development
- Land reclamation
- Sustainable Agriculture
- Integrated (non-chemical) Pest Management
- Vermi-composting and organic manure
- Horticulture and herbal medicinal plants
- Promotion of mixed-cropping practices
- Alternatives for shifting cultivation
- Animal husbandry
- Livestock nutrition and health
- Rearing and management of livestock
- Barefoot Veterinary Technicians' Training
- Renewable Energy
- Biogas plants
- Training of biogas masons
- Geographical Information Systems

(Source: Website)

NAVDANYA

THE RESEARCH FOUNDATION FOR SCIENCE, TECHNOLOGY AND ECOLOGY

DIVERSE WOMEN FOR DIVERSITY

BIJA VIDYAPEETH

A-60, Hauz Khas, New Delhi – 110 016. Ph: 26968077, 26853772 Fax: 26856795 Web: www.navdanya.org

(Contact person: Dr. Vandana Shiva)

Navdanya, The Research Foundation for Science, Technology and Ecology (RFSTE), Diverse Women for Diversity (DWD) and Bija Vidyapeeth are all connected in one way or another with organic farming.

Navdanya is a trust, which was initiated as a project of the RFSTE. It concentrates on seeds and organic farming and also markets organically grown products. . Over the last two decades, Navdanya has created a silent revolution transforming biodiversity and organic farming into an anti poverty strategy for small and marginal farmers. To complete the organic chain from seed-to-the-table, Navdanya has started organic outlets and cafeteria that is slowing but surely introducing a change in food consumption patterns. Navdanya brings out publications on agro-ecology issues that are priced very reasonably and a regular biodiversity journal, Bija.

RFSTE works on policy matters and attempts to lobby with government officials and other institutions to move in the direction of sustainable agriculture i.e farming without chemicals and poisons and without destroying the fertility of the soil. It has done work on Intellectual Property Rights, W.T.O. and Agriculture and has successfully fought two cases of biopiracy of Neem and Basmati rice.

DWD is an international movement which was started in the mid 1990s with RFSTE / Navdanya as founding members. DWD seeks to defend diversity, peace and democracy from the growing threats of monoculture, war, totalitarianism and fundamentalism. In India, DWD articulates its commitment to diversity and non-violent technology through the National Alliance for Women's Rights.

Bija Vidyapeeth conducts courses related ecology and sustainability on the lines of Schumacher College in UK. Its curriculum revolves around the new trinity, 'soil, soul and society.' They also hold organic farming courses for farmers.

Dr. Shiva combines intellectual research with grassroots activism to tackle environmental problems. Her work has won her many national and international awards, including the Right Livelihood Award (the Alternative Nobel Prize), the Earth Day International Award and the Global 500 Award.

She has authored and co-authored many books on bio-piracy, sustainability, water, ecology, seed bio-diversity etc.

(Source: Communication with OIP and Website)

CENTRE FOR SCIENCE AND ENVIRONMENT (CSE)

41 Tughlakabad Institutional Area, (Near Batra Hospital), New Delhi –110 062. Ph.: 011 29955124, 29955125, 29956394, 29956401, 29956399, Fax: 011 29955879, Email: cse@cseindia.org, Web: www.cseindia.org

Contact person: Sunita Narain

CSE did pioneering work in documenting organic farms within the country. Detailed reports on organic farming, sustainable agriculture, and the latest in composting (including human waste) and other techniques are featured on their website. Down to Earth, CSE's environmental weekly features stories on organic farming and sustainable agriculture from time to time.

The website is a virtual knowledge bank on topics relating to varied environmental issues. However, if one is looking for information specific to organic farming, then the search column on the main page is the best bet. It links to all articles and archival material available with CSE. A few specialised topics like organic farming in India, in Asia, Policy, weblinks to related sites etc. pop up immediately on search.

(Source: Website)

KALPAVRIKSH

Delhi:134, Tower 10, Supreme Enclave, Mayur Vihar, Phase 1, Delhi 110 091. Ph.: 011 22753714

Pune:Apt 5, Shree Dutta Krupa, 908 Deccan Gymkhana, Pune - 411 004, Maharashtra. Ph.: 020 25654239 / 25675450, Fax: 020 25654239, Web: www.kalpavriksh.org

Contact: Ashish Kothari

Kalpavriksh, an environment action group with offices in Delhi and Pune, plays a supportive role in campaigns on environment protection, peoples' rights to natural resources and sustainability issues with policy research, networking, documentation etc.

Kalpavriksh has a publishing wing too. Details of work, campaigns etc. are available on their website.

(Reference: Website)

TRIBES

9 Mahadev Road, New Delhi-110001. Ph.: 011-23731214, 23316192, Telefax: 23718306, Email: tribes@vsnl.net, Web: www.trifed.nic.in

The store of exquisite tribal artifacts, located at New Delhi, is a project of the Tribal Cooperative Marketing Development Federation of India Ltd. (TRIFED), Ministry of Tribal Affairs, Govt. of India. TRIBES offer a range of tribal artifacts, minor forest produce, spices and processed organic food products etc.

TRIBES shops aim at showcasing tribal craftsmanship and providing a market platform to the tribal people by undertaking sale of their products through 18 outlets across India.

It has a website listing products and also provides an online shopping facility. Details of product use, history and procurement are also mentioned. One may consider it as a good marketing outlet for organic farmers, providing visibility to products in some of the big towns of India.

(Source: World Wide Web)

FR K.T. CHANDY

Indian Social Institute (ISI), 10 Institutional Area, Lodi Road, New Delhi –110 003. Ph.: 461 1745/462 2379/462 5015

Fr. K.T. Chandy is an agronomist by profession. He has been working at the Indian Social Institute, heading the department of agricultural education since 1988.

His main work is agricultural education for social workers and school teachers who in turn will provide knowledge to the present adult rural poor farming classes. He prepares simple educational materials in the form of booklets from which social workers and teachers can learn and in turn teach the people and students in schools. He has prepared booklets on 480 topics which are of interest to farming communities. The topics are classified under 88 series and all topics are directly or indirectly involved with sustainable, organic and ecological farming. (Source: Communication with OIP)

SUSTAINABLE AGRICULTURE INFORMATION NETWORK-Sustainet India

B-4, Greater Kailesh Enclave Part II, New Delhi – 110 048. Ph.: 011 40520139, Fax : 011 40520133, Cell: 09871766826, Email: poonam.pande@gmail.com, poonam.pande@gtz.de, Web: www.sustainet.org

Contact: Dr. Poonam Pande, Country Coordinator, India

Sustinet is composed of German networks and three further networks in the pilot regions of India, Kenya / Tanzania and Peru/ Bolivia. The Program aims to establish networks between institutions involved at local, regional and International levels that are working to highlight the importance of good agriculture practices capable of reducing rural poverty with a potential for wider dissemination. The core idea is to demonstrate the benefits, viability and widespread applicability of sustainable, locally adapted land use as a strategic way to overcome hunger and poverty in the developing world.

Sustainet India

In India, Sustainet is a group of partner organizations that have a background for working on issues based on organic farming , creating linkages between farmer and market, advocating public private partnerships and tackling issues of dry land agriculture by watershed approaches keeping in mind the protection of biodiversity. It details examples of how development initiatives have helped farmers in different areas including some of the remotest parts of the country break out of the cycle of poverty, debt and environmental degradation.

Cases of good practices in sustainable agriculture – A pathway out of poverty for the rural poor is available at: www.sustainet.org. (Source: Brochure and Website)

SOMPAL SINGH

Farm Address: Near Bhondsi, Dist. Gurgoan, Haryana.Ph: 0124 4005321, Cell: 9811027676 Email: HYPERLINK "mailto:sompal@nic.in"sompal@nic.in

Sompal Singh Shastri, Founder Chairman Emeritus of ICCOA. has held key positions in government since 1992 as Member of Rajya Sabha; Lok Sabha; Minister for State for Agriculture and Water Resources, GoI; Member of the Fifth Planning Commission; Vice Chairman of the State Planning Commission, Govt. of Madhya Pradesh.

He was instrumental in setting up the Organic Farming Task Force for the Govt. of India. Shri Sompal is a highly respected agriculture expert. On matters related to agriculture, the sheer comprehensiveness of knowledge at his command over a vast array of facts and figures stands unmatched.

An eminent economist, Shri Sompal Shastri continues to campaign for the promotion of organic farming at Govt., national and international fora.

Having given up his active farm activities on retirement, he is presently content to have a small two acre farm on the outskirts of Delhi. The organic farm has seven cattle – native Sahiwal breed – and it grows vegetables and fruits for the family table.

(Source: Tele-interview with OIP)

GENE CAMPAIGN

J-235/A, Lane W-15C, Sainik Farms, New Delhi 110 062. Ph.: 011-29556248/29556841, Fax: 011-29555961, Email: genecamp@vsnl.com, Web: www.genecampaign.org

Contact: Dr. Suman Sahai

GENETIC RESOURCES ACTION INTERNATIONAL (GRAIN)

J-20, II Floor, Jungpura Extension, New Delhi-110014. Tel/Fax: 11-24315168, Email: shalini@grain.org, Web: www.grain.org. Contact: Shalini Bhutani

BHANDORA ORGANICS

29 Sant Nagar, II Floor, East of Kailash, New Delhi 110 065, Ph.: 011-26433934, Fax: 011-26433934, Cell: 09968474266, 09899382587, Email: info@bhandora.com, bhandora@yahoo.co.in, Web: www.bhandora.com

Farms & Factory: Behsuma, Dist. Meerut (UP) 250 404, Ph.: 01233292175, 9897030725

Certified organic products:

Amritam Organic Foods: rices, wheat flour, pulses, mustard oil, spices, porridge, tea, coffee, etc. Vegetables, fruits, manures and pesticides, flowers, medicinal & herbal plants, nursery plants.

(Source: Brochure and Website)

A.T. DUDANI, VIJAY CHAHAL

Society For Citizen Concerns, C-35 Panchsheel Enclave, Delhi – 110 017.

(Source: ARISE)

P.V. SRIDHARAN

Editor, Energy Environment Monitor, Darbari Seth Block, India Habitat Centre, Lodi Road, New Delhi – 110 003.

(Source: Communication with OIP)

DR SAILEN GHOSH

77, Manavsthali Apartments, 6, Vasundhara Enclave, Delhi – 110 096.

(OIP Archives)

DR SANTOSH SATYA

Center for Rural Development and Appropriate Technology, IIT, Hauz Khas, New Delhi – 110 016.

(Source: ARISE)

MINISTRY OF AGRICULTURE

Dept. of Agriculture & Corporation, Krishi Bhavan, New Delhi 110 001. Ph.: 011 23382454

Fax: 011 23382357, Res: 011 23381348, Email: satish.krishi@nic.in

Weblink: www.goidirectory.nic.in

MINISTRY OF ENVIRONMENT & FORESTS

Paryavaran Bhavan, C.G.O. Complex, Lodi Road,
New Delhi 110 003.
Weblink: www.goidirectory.nic.in

DEPARTMENT OF BIOTECHNOLOGY

Government of India, Block 2, C.G.O. Complex, Lodhi Road, New Delhi 110 003, Email: ninawe.dbt@nic.in Weblink : www.goidirectory.nic.in

Contact: A S Ninawe, Director

FOOD AND AGRICULTURE ORGANISATION (FAO)

55, Lodi Estate, New Delhi 110 003. Ph.: 04628877/24693060, Email: FAO-IN@fao.org, Web: www.fao.org

FORUM FOR BIOTECHNOLOGY & FOOD SECURITY

7 Triveni Apartments, A-6 Paschim Vihar, New Delhi – 110 063.

Contact: Bhaskar Goswami, Cell: 09811191335

FOUNDATION FOR PROMOTION OF NATURAL PRODUCTS

4C/ 17 Old Rajindar Nagar, New Delhi - 110 060. Web: www.fpnpindia.com

AHIMSA FOUNDATION

F-125, Lado Sarai, Mehrauli, New Delhi - 110 030. Email:shakahar@vsnl.net

Contact: Laxmi Narayan Modi

North & North West India

Haryana

Organic Farms

RAMESH CHANDER DAGAR

Akbarpur Barota village, District Sonipat, Haryana.

Ramesh Chander Dagar has successfully disproved the popularly held belief that small farm lands are unprofitable. With the use of integrated organic farming he is able to generate an average income of Rs. 10 lakhs per year from one hectare of land. What triggered this success were the claims of many that small land holdings were not viable for agriculture. So, 4 years ago he set aside one hectare of his land to begin experiments in maximizing income generation through what he calls integrated organic farming. He defines integrated organic farming as farming that does not merely mean not using pesticides but also involves other practices such as bee keeping, dairy management, bio gas production, water harvesting, composting and making the most appropriate, sustainable use of naturally available resources.

He says to be a successful integrated organic farmer one needs to have a clear understanding of 3 vital factors: the market demand, the natural resources available and maintaining product quality. And adds that it is impossible not to make a decent living if these thumb rules are followed. He follows a simple strategy: before sowing a new crop he conducts a market survey to understand the demand and only when he is 60% sure of getting good returns does he take the 40% risk of sowing a particular crop. Dagar learned these practical aspects from firsthand experience.

He started with a 1.6 hectare farm in 1971 and today has a total of 44 hectares, all completely under integrated organic farming. All seasonal vegetables, fruits, paddy, wheat, mushroom and flowers are grown organically. He has also started growing exotic vegetables and fruits such as lettuce, baby corn, and strawberry for export.

One hectare of land has been set aside for research. The 'research lab' comprises of composting pits, farm pond with fish, bio gas and flower plots all interlinked in various agro cycles to add to the magic seven digit figure annual income.

Dagar has not kept all these self learned techniques to himself but is also busy spreading the word in his home state of Haryana and to the neighbouring states of Madhya Pradesh, Punjab, Gujarat, Rajasthan, etc. The Haryana Kisan Welfare Club through which he functions is giving hands on training in villages on integrated farming techniques. Recently in February 2009, four thousand farmers came together in Sonipat to interact and to learn from one another in what turned out to be one of the largest organic information exchange melas. Experts, agricultural scientists and Govt. officials were also invited. The Haryana Kisan Welfare Club has branch offices in all districts. Close to 5000 farmers are active clubs members busy spreading the word around.

Dagar has his own reservations about the Government's ability for timely and speedy interventions and thinks it best to work through organised farmers' groups. Just now Dagar's focus is on trying to organise certification at affordable costs. The Club is exploring the possibility of group certification schemes where rich farmers can to a certain extent subsidise the certification process of the not so well disposed.

For vermicomposting, Dagar uses paddy hay and paddy discards locally known as pawal. He finds it to be an excellent raw material for vermicompost. 300 tons of vermicompost are produced annually for farm use and some surplus is sold at Rs. 3 per kg. Dagar is all praise for vermicompost and says it is the best soil nutrient for it not only retains soil moisture but reduces water consumption by nearly 25%. Dagar gifts 2 kgs of earthworm to any farmer who pledges to go organic. Pawal is also being used as substrate for growing mushrooms. Mushrooms fetch him Rs. 3 lakhs per annum.

He produces 600 tonnes of organic manure, keeps 50 buffaloes, has a dairy, bio gas and composting units. Bio-gas is used for the personal kitchen and to run the fodder cutting machine. Slurry is fed into composting pits. The water harvesting ponds also double as fish ponds fetching him an income of Rs.30,000 per annum.

Dagar keeps 150 bee boxes that yield 35 to 40 kgs of honey per box. His income from honey is Rs. 4 lakhs per year. Bees being excellent pollinators have helped increase his crop output by 10 to 30%.

Solar power is used for running pumps and recharging household inverter batteries. A five hundred square meter green house on the farm grows exotic crops.

He is presently experimenting with a Chinese plant that claims to yield a sweetening agent 300 times sweeter than cane sugar.

(Reference: www.indiaenvironmentportal.org.in)

NATURA AGROCONSULTANTS PVT. LTD.

268/ Sector 15A, Faridabad - 121007, Haryana. Ph.: 0129 2289115, Email: anjaligulati3@gmail.com

Contact: Anjali Gulati, Director

Branch Office: Shanthi Kripa, Murnad, Coorg District - 571252, Karnataka. Ph.: 08272 232441, Email: drathimmaiah@gmail.com

Contact: Dr. A.Thimmaiah, Director

In 1999, my wife Anjali and I started a consultancy firm, Natura Agrotechnologies, to provide advisory services in organic/biodynamic agriculture and solid waste management. Our aim was to make a farm sustainable by utilizing the local resources. In other words we wanted to turn a farm from Low External Input Sustainable Agriculture (LEISA) to No External Input Sustainable Agriculture (NEISA).

In 2002, we expanded our work and formed a private limited company, Natura Agroconsultants Pvt. Ltd. Due to our sound technical background we were the most sought after consultants by the big agri-business companies. Most of the large organic agriculture projects in India like tea, coffee, medicinal plants, basmati rice etc., were advised by us. The aim of our services is to transform a farm or estate to a self-sustainable farming system. We have helped small and marginal farmers in different parts of India by providing free training to farmer groups in organic/biodynamic agriculture.

We have rendered our advisory services to various international organizations like International Fund for Agriculture Development (IFAD), Rome; Food and Agriculture Organization (FAO) of United Nations; International Development and Research Centre (IDRC), Canada; International Centre for Integrated Mountain Development (ICIMOD), Nepal; SNV (Netherlands Development Organization), Bhutan; Maharishi Group, Holland; Tradin International, Holland; Stassens Group, SriLanka, Agribio, Italy.

At present I am working as advisor to SNV (Netherlands Development Organization) providing technical support to the Govt. of Bhutan in organic agriculture.

Some of our major projects are:

1. POABS Estates Pvt Ltd, Seethargunda Estate, Nelliampathy, Palakad District, Kerala- 678511. Ph.: 04923 246223, Email: poabs@poabsorganic.com

Crops: Organic tea, coffee, spices, waste management and Eco-tourism.

2. Organic India Pvt. Ltd., Plot No.166, Vill. Kamta, P.O.Chinhut, Faizabad Road, Lucknow – 227105, Ph: 0522 2701579, 2702101, 2702103 (Direct), Fax- 0522 2701395, Cell: 09839018151, Email: balram@organicindia.com

Crops: organic cultivation of tulsi, medicinal plants, vegetables, cereals etc.

3. Farm Fresh Foods Pvt. Ltd, Batamandi, Poanta Saheb, Himachal Pradesh -173025, Ph.: 01704 222363,223134, Email: farmfood@sancharnet.in, subodhabbhi@hotmail.com

Crops: Organic wheat, basmati, mangoes, medicinal herbs.

4. Assam Company Limited, Girish Chandra Bordoloi Path, Bamunimaidan, Guwahati, Assam. Ph.: 0361 2550257, 2551422

Crop: organic cultivation of tea.

5. Vox Biodynamic and Vedic Farm, Thalaikkadu House, 2/979, Periyar Nagar, Madipakkam, Chennai – 600091, Tamil Nadu. Ph.: 044 2475456,2472885, Email: voxbalaji@yahoo.com

Crops: Organic mango, guava, fruits, vegetables and medicinal plants.

6. Craigmore Estate, P.Box No.10, Pollibetta, Coorg – 571 215, Karnataka. Ph.: 08274 2451341, Cell: 09448051341, Email: info@kmbimages.com, pramilamuthanna@yahoo.com

Crops: Organic coffee, pepper, cardamom and vanilla.

7. Ashakiran Estate, Konanakatte, South Coorg, Karnataka. Ph.: 08272 449370, 440622, Email: professo@sancharnet.in

Crops: organic coffee, pepper, paddy, ginger and medicinal plants.

8. Institute of Himalayan Environmental Research and Education (INHERE), 206, Gupta Arcade, Plot No. 5, Mayur Vihar, Phase I, New Delhi-110091, Ph.: 011 22713469,22744507 Email: inhere@rediffmail.com

Crops: Chilies, walnuts, garlic, onion, turmeric, pulses, vegetables and medicinal plants.

9. Sunstar Overseas Limited, 40 Km Stone, GT Karnal Road, Bahal Garh, Sonepat, Haryana. Ph.:0130 2381926

Crops: Organic Basmati.

10. Bombay Burmah Trading Corporation (BBTC), Singampatti Group of Estates, Manjolai PO, Tirunelveli – 627420, Tamil Nadu. Ph.: 04634 220485, Email: bbtc@dataone.in

Crop: Organic tea.

(Source: Dr. A.Thimmaiah)

THE HARYANA STATE COOPERATIVE SUPPLY AND MARKETING FEDERATION (HAFED)

Sector-5, Panchkula, Haryana. Ph.: 0172 2590520-26, Fax: 0172 2590711, Email:hafed@hry.nic.in, Web:www.hafed.gov.in

HAFED has initiated the promotion of organic farming in Haryana. Initially the project target is at 5000 acres. 1320 farmers having 1609 acres of farm land in the districts of Kurukshetra, Karnal and Kaithal have been identified and are being assisted to convert to organic farming.

Registered farmers are provided farmer services, trainings and farm level advisory services as per NPOP, NOP and EU standards of Organic Farming by Morarka Foundation. Organic Certification as per International standards is being done by OneCert. Support networks for marketing tie ups are being established and promoted. A pilot experiment to air weekly radio programme on organic farming is already in operation. Demonstration of organic practices on 50 acres has been done at HAFED's cost. Five hundred farmers have been given earthworms free to start making vermi compost. HAFED has taken up the marketing of certified organic wheat and mustard oil and is expecting to add more products to this list. This is the first organised effort of its kind to promote organic farming in the state of Haryana where the 'commitment to go organic' is the only investment on the farmers' part. (Source: Website)

HARYANA ORGANIC GROWERS' ASSOCIATION

Pargatisheel Kisan Club, Sirsa- 125 055, Haryana.

Contact: Surinder Singh Vaidwala, President

HEAVENLY FARMS

Village: Theri Baba Sawan Singh, P.O. Moriwala, Dist. Sirsa, Haryana. Cell: 09416128634, 09254342666, Email: heavenlyfarms@hotmail.com, www.heavenlyfarms.com

Producer & exporter of organic food

VAIDWALA ORGANIC AGRICULTURE FARM

Surinder & Co, Hisar Road, Sirsa 125 055, Haryana. Ph.: 01666 250756, Cell: 09416045751

Certified farm.

Himachal Pradesh

Organic Farms

THE SYLVAN HEIGHTS BIO-DYNAMIC AND VEDIC FARM

Batamandi, Paonta Sahib - 173 025, Himachal Pradesh. Ph.: 01704-320900, Fax: 01704-224536 Cell: 09816008399, 09315608399, Email: subodh.abbhi@gmail.com , subodhabbhi@hotmail.com, piyusha4@gmail.com

The farm is within the dense Sal forests along the Yamuna river in Doon valley of the Shivalik mountain ranges. The entire farm area is 25 acres of which ten acres are mango orchards. The mango varieties grown here are Langras, Dassehris, Chausa and Ram Kelas. Cultivation of paddy, wheat, adzuki beans, soya beans, pulses and fodder for the farm animals is done on the rest of the land. Many varieties of tulsi are grown in the sunny parts of the orchard and turmeric and ginger are grown in other suitable portions.

The farm uses various wild growing plants like lantana, bhang, congress grass etc for making liquid manures and compost after adding biodynamic preparations in homeopathic doses. CPP (cow pat pit) is made from dung of the farm cows. CPP is used for a stem paste and for spraying on the crops. Preparations 500 and 501 are made by introducing cow dung and silica in cow horns which are buried underground and taken out in March and September. Cow urine is used as a spray to combat pests, and as a plant nutrient. Sprays based on bhang, garlic, ginger etc., are used to control pests on the farm.

Agnihotra (Homa), as prescribed in the Vedas is performed at sunrise and sunset, for purifying the environment and marshalling the cosmic forces for plant and soil vitality. This farm is certified by INDOCERT.

Certified organic products:

Products include Kasturi brown basmati rice; Kasturi white basmati rice; Dehradun white basmati rice; Dehradun brown basmati rice; turmeric (haldi) powder; wheat; wheat atta (flour); maize flour(atta); wheat porridge; soybean; soybean flour (atta); groundnut; ginger; garlic; fruits; vegetables; spices and pulses.

(Source: Brochure)

HIMALAYAN ORGANIC AGRICULTURE RESEARCH AND DEVELOPMENT (HIMOARD)

Khaneri Rampur Bsr. 17200l, Shimla, Himachal Pradesh. Ph: 01782-233643 (o) , Cell: 09418034928, Email:drrsminhas@gmail.com, drrshimla@gmail.com

Contact: Dr. R.S. Minhas, Chairman

HIMOARD provides many services for the promotion of organic horticulture in the state of Himachal Pradesh. It works in all the 12 districts of Himachal with over 2000 registered members. Its activities include:

- Educating farmers to undertake crop diversification.
- Spreading awareness of the concepts of IPM/ INM (Integrated Nutrition Management) in order to assist farmers to adopt organic framing practices.
- Facilitating certification and marketing of produce.
- Supporting medicinal, aromatic and herbal plant production including processing for value addition.
- Providing advisory services at farmer clinics and to Kisan Call Centers@1551, a free service provided by Ministry of Agriculture GOI.

'Divya Himachal' is a newspaper published from Dharmashala and Chandigarh every Tuesday.

MAP (herbals) was started by the organisation keeping in view the rich medicinal and aromatic heritage of these plants in Himachal Pradesh. It promotes the cultivation of these heritage species as intercrops in orchards that have been organically maintained, supplies germ plasm, identifies outbreak of disease and follows up with suggestions for preventive measures.

Certified Products: Apple, almond, kiwi, plum, apricot, walnut, cherry, offseason mango, litchi, pears, peach, nectarine, chilgoja, pomegranate. Pulses like rajmah, mash (urad), mung, kulth, masur, soyabean, organic wheat and maize. All types of traditional grains like koda, kaoni, ogla, Fhapra, chillai, bathu, ropa (lal chawal) nauri nut, basmati rice and exotic vegetables and medicinal plants that grow in hilly regions.

The HIMOARD farmers' group has on their list 132 apple growers with land holdings of 0.1 acre to 15 acres, producing anywhere between 70 to 5000 boxes of organic apples per season.

Chairman HIMOARD is the National President of Stone Fruit Growers Association of India, promoted by Ministry of Agriculture GOI.

(Source: Brochure and Webresearch)

PARYAVARAN AVAM GRAMIN VIKAS SANSTHAN

HIG-8, Phase-2, Housing Board Colony, Saproon – 173 211, Solan, Himachal Pradesh. Ph: 01792 225373, Cell: 09418127557, email: prempagvs@yahoo.co.in

Paryavaran Avam Gramin Vikas Sansthan (PAGVS) started its campaign for organic farming in early 2003 in Solan & Sirmour districts.

PAGVS has brought 1200 families under organic farming across an area of 50 hectares. In the PGS, the farmers agree to a 'code of conduct' at the village meeting, to follow certain rules and norms. The land use classification for the use of organic farming is certified by each farmer and baseline record is maintained farmer wise. Communities take an 'oath' in the presence of peer – inspectors and officials to follow standards and norms of organic farming agreed in the meeting.

PAGVS is attempting to bring recognition to their certification process. Through the farmer federations, it is exploring opportunities for creating local and niche markets. Goods worth Rs. 2,91,000/- were sold by these farmers during the year 2006-07 and Rs. 6,19,125 during the year 2007 -08 showing quantum jumps.

More than 3000 farmers have been trained in the preparation of bio- pesticides using locally available natural resources in combination with ginger, garlic, chilly etc. The details of some of the common plants of the area used in the preparation of bio- pesticides are available on request.

PAGVS has developed a mechanism for the organic cultivation of off- season vegetables especially tomato and capsicum. It has also developed different types of compost i.e. bio-dynamic compost, vermicompost, NADEP compost, etc., for nutrient management of the soil.

(Source: Brochure)

CENTRE FOR ORGANIC FARMING

ICAR, Niche Area of Excellence in Organic Farming

CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur, Kangra District, Himachal Pradesh.

Contact: Project Director, Ph.: 01894-233961, Email: prof.atul@gmail.com

(Source: Brochure)

North & North West India

Jammu & Kashmir

LADAKH ECOLOGICAL DEVELOPMENT GROUP – LEDeG

Ladakh Ecological Development Group, Karzoo, Leh, Ladakh – 194101, Jammu & Kashmir, INDIA, Phone: (91) (1982) 253221, E-mail: ledegleh@gmail.com, website: www.ledeg.org

(Contact: Sonam Dawa, Director)

LEDeG is a non-governmental organisation working to promote ecological and sustainable development that is in harmony with and builds on the traditional culture of the hill people of the region. Its activities include development and dissemination of various appropriate technologies like Trombe wall solar space heating units, solar water heating systems, solar ovens, hydraulic rams, improved watermills, micro-hydro installations, etc. It imparts training in development of traditional handicrafts. It is an active promoter of traditional organic farming and provides education and information on environmental problems.

A recent foray has been into training people in value addition to their indigenous and abundantly available apricot and sea-buck-thorn. Many processed food and self care products from these are made and sold.

In recognition of its work, LEDeG was awarded the Right Livelihood Award, also known as the Alternative Nobel Prize in 1986 and the Inaugural Prize for sustainable and participatory development by the Danish Development organisation, Mellemfolklight Samvirke in 1989.

(Source: Website)

Vijay Jardhari of the Beej Bachao Andolan discusses organic farming ideas with farmers and activists from Ladakh

Punjab

PUNJAB'S TRYST WITH NATURAL FARMING

Punjab, the birth place of the green revolution and the biggest user of pesticides and fertilizers in the country took its first tentative steps of moving towards organic practices about a decade ago when several progressive farmers started converting their farms to sustainable methods. This prepared the ground for what today has taken on the nature of a mass movement, at least in a few districts of the Punjab and is sure to catch up in the rest of the region.

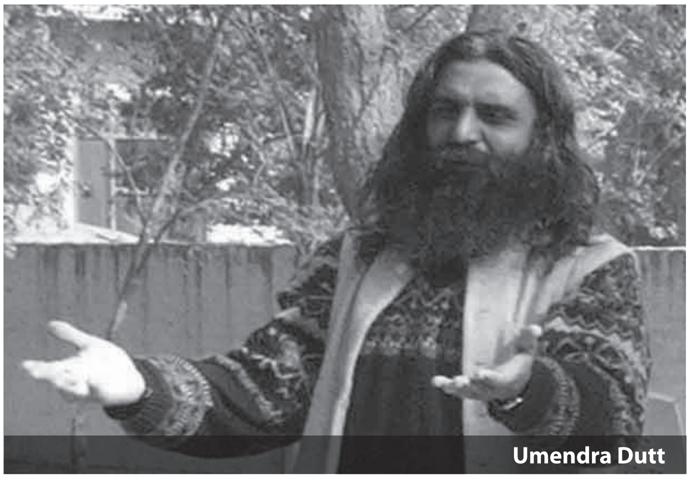
A social movement with deep empathy for nature and compassionate concern for the destroyed ecology, destructed landscape, devastated natural resources, farmer debts and suicides, terminal illnesses, etc., was born about seven years ago. The Kheti Virasat Mission drew its inspiration for a voluntary commitment to make Punjab pesticide free, debt free, disease free and sorrow free and to restore its environmental health and peoples' wellbeing from Guru Nanak's message of – Well being for all life forms – 'Sarbat da bhala'.

Many people have been key players in this happy turn of events. During the initial phases, KVM invited several organic/natural farming experts from all over India to build awareness among the farmers of Punjab. Manohar Parchure and Ram Kalaspurkar have been significant contributors -touring the state, meeting farmers, raising awareness- preparing the 'ground' for a changeover.

Assistance and whole hearted technical support have come from innumerable well wishers from varied backgrounds, professional positions and institutions. CSA's (Hyderabad) technical contribution has been significant. Dr. T. P. Rajendran, Devinder Sharma, Dr. G. V. Ramanjaneyulu and his team, Kavitha Kuruganti, Subhash Sharma have contributed to turning a significant portion of the Punjab farmscape from a chemical green to a natural green.

A great many farmers who have converted to natural methods have been greatly influenced by the practices propounded by Subhash Palekar of Amravati, Maharashtra, an ardent promoter of natural farming.

The movement has taken on a campaign like mode and the pace is of one who is working against time and tide. This is in a sense true if one were to go by facts and figures. Punjab farmlands for quite some years now have been in a state of progressive ecological degradation. The cost of farming has become unsustainable. In the past two decades, farmers' suicide rates have been high. According to the 2004 survey by the Punjab government, 2116 farmers have taken their own life since 1990. The Bharatiya Kisan Union however pegs the figure at 13,000 between the period 2000 and 2005. The National Sample Survey Organization in its 2005 survey on 'indebtedness of farmer households in Punjab' revealed that on average, each farmer household carried a debt of Rs. 41,576 against its name. The Organic Farmers Council that was promoting organic farming did not help much as the organic farming inputs being recommended by them came from external sources. Inputs like vermicompost etc., were being purchased by farmers instead of being generated on farm.


Umendra Dutt

Natural farming as propounded by Palekar has introduced farm-made inputs to keep the soil pest free while practices of mixed cropping, mulching and keeping the soil covered have helped to maintain its nutrient balance and decrease the consumption of water by 40%. Today, 1214 hectares of farmland in Punjab is under natural farming a la Palekar.

Natural farming promotes fermented mixes of cow dung and cow urine. The scientific rationale being- micro-organisms developed during fermentation attract on-farm earthworms which work on the soil leaving it puffy, soft and aerated. Localised indigenous worms have proved to be the best for the soil of Punjab. Gobar and Gomutra of indigenous breed of cow like Sahiwal, Tharparkar and Rathi give the best results in natural farming. One gram of dung of a desi cow contains 3000 million bacteria as against 5-6 million bacteria in the same quantity of dung of an American breed cow. Also the smell of the dung of local cow breeds keeps away visiting herbivores like neelgai and rabbits that sometimes are a menace on the farm.

These natural farming techniques, grounded soundly in self confidence, plant and animal biology and ecology have worked well for the farmers of Punjab. It seems the converted farmers of Punjab are here to stay if for nothing else, then for the simple reason that the produce is fetching a premium. For the Punjab farmer natural farming is making both ecological and economic sense.

In a deeply spiritual state, a spiritual journey of another kind has begun.

(Reference: Web resources, K.V.M., www.downtoearth.org)

KHETI VIRASAT MISSION (KVM)

Post Box No 1, Jaitu, District Faridkot, Punjab, Ph: 01635 503415; Cell: 09872682161, 09915195061, Email: umendradutt@gmail.com Web: www.khetivirasatmission.org
Contact: Umendra Dutt, Executive Director

Kheti Virasat Mission (KVM) is a not-for-profit, civil society action group working on organic farming issues since 1998. It was registered as a trust in March 2005. KVM enjoys the patronage and support of eminent experts and personalities from the field of environmental health, medicine, agriculture, ecology etc. Its mission is to return ecological stability to Punjab through sustainable agricultural practices. KVM has a strong grassroots presence among the farmers of Punjab. Its outreach, training and awareness programmes have influenced the conversion of 20 farms to natural/organic farming, another 200 are under conversion process and over 500 have taken a step forward by growing organically for self consumption.

KVM has two distinct functioning bodies: Vatavaran Panchayats and Environmental Health Action Group (EHAG). EHAG is a forum for physicians, medical professionals and experts of life sciences to take up issues of environmental health.

Over the last few years, KVM has set up several village-level participatory forums called Vatavaran Panchayats (comprised mostly of farmers) seeking local holistic ecological solutions. Model natural farms are being setup. These farms serve dual purposes; as research laboratories for experimenting with new techniques and refining existing natural farming techniques and as 'paatshalas' (schools) for farmers.

Vatavaran Panchayat has its units in most districts in Punjab. It may be rightly called a peoples' initiative for grass root propagation of natural farming, conservation of natural resources and ecology through voluntary participation and contribution.

For promoting the use of indigenous seeds, community seed banks have been set up at the village level. Each seed bank serves a cluster of villages. They undertake conservation, multiplication (both in-situ and ex-situ) and distribution of seeds. Construction of water harvesting structures is being initiated particularly in Malwa.

The organic crops and processed products of the KVM farmers may be collectively listed as follows:

Rabi : Wheat, mustard, coriander, methi, metha , masoor, black gram, potato, radish, carrots, peas, barley, oats, onion, turnip, saunf, ajvaine, palak, sunflower, cauliflower (gobhi), cabbage, chukandar, garlic; horticulture produce: citrus family fruits - keenow and malta, and others - ber, avala; oil seeds - taramira, halon, alsi.

Kharif : Cotton, paddy, basmati, maize, green gram, arhar, urad, groundnut, soybean, bazra, castor , jawar, kaddu, okra, brinjal, cowpea, lauki, pettha (pumpkin), ram tori, tomato, kakdi, kheera, lobiya, brinjal, gawar, bhindi, chilli, turmeric , sugarcane, etc. Fruits: jamun, guava, peach.

Organic Products: Biscuits, besan-gram flour, dalia, moth dal, bazra flour, bazra dalia, corn flour, wheat dalia, gulab jal, basmati rice, lady's finger seeds, mustard oil, gur, shakkar, desi ghee, sharbat, rice, wheat atta , desi moong dal, sewian-vermicilli. Quilts, razai and pillows from naturally grown cotton.

On farm participatory research by farmers is taken up under Vatavaran Panchayats.

Studies on reproductive health crisis, health impacts of pesticides and environmental impacts of coal based thermal power plants are taken up by EHAG.

KVM brings out a Punjabi journal, 'Kudrati Kheti' and has published several booklets for awareness and education.

Umendra Dutt says: 'Though KVM is registered as a charitable trust, it is more of a farmer centric ecological movement. It is the only one totally devoted to establishing ecological agriculture in the Punjab. The collective backing and mass support of farmers, farmers' groups, medical professionals, advocates, mainstream and (other) scientists, bureaucrats, academicians, etc., has given KVM the strength to earnestly present the case of ecological agriculture in Punjab. With a small fleet of full timers and a wide spectrum of voluntary supporters, KVM has established a strong, capable and penetrative civil society organizational structure. It works on all components of farming crisis in Punjab and is presently organising an assertive nationwide campaign against Bt brinjal.'

(Source: Communication with OIP)

Organic Farms

AASHISH AAHUJA

Vill & Post Khubban, Teh. Abophar, District Firozpur, Punjab. Cell: 09417096709, Email: haldighati@gmail.com.

Aashish Aahuja comes from a farming family and has a 30 acre farm. He has been farming organically for the past three years using natural farming techniques of Subhash Palekar. His farm is irrigated using canal and tube well sources. He has never been involved in chemical farming before. He grows wheat with companion crops, rice, vegetables, green gram, mustard, basmati rice, citrus fruits. Bajra is grown for animal fodder only. The farm inputs are biogas slurry, ghan jeev amrita, jeev amrita and farmyard manure etc. He maintains a number of cows and buffaloes. His crops are protected using herbal repellants and trap crops etc. The only difficulty he faces on the farm is the reluctance of labour to do labourious farm activities. The surplus produced is directly marketed and sent to the local mandi. He gets a good premium price for his produce. His produce is also labeled organic. Initially the yield on his farm was not very encouraging but with persistent use and full-fledged implantation of natural farming techniques the output is now satisfactory.

(Source: Kheti Virasat Mission)

AMARJIT SHARMA

Vill & Post Chaina Teh. Jaitu, District Faridkot, Punjab. Ph.: 01635 290132, Cell: 09463550720

Amarjit belongs to a farming family and has been farming on 5 acres of land for 25 years. He switched to organic farming 4 years ago. His farm is irrigated by tube well. Failure of chemical farming and the adverse effects of pesticides and fertilizers on his farm made him switch over to organic practices. He grows wheat with companion crops, cotton for commercial purposes and vegetables for domestic use. Jowar and bajra are grown for animal fodder. He follows natural farming tech-

Punjab organic farmer Amarjit Sharma

Punjab organic farmer Hartej Singh Mehta

niques of Subhash Palekar and uses biogas slurry, ghan jeev amrita and jeev amrita for inputs. He maintains two Indian hump cows, two buffaloes and one ox. He laments that labour is expensive and also unwilling to work on elaborate farming practices. To deal with pests he uses herbal repellants and trap crops. The farm surplus produced is sold to mandis and also through direct marketing. Initially when he shifted to organic there was a decrease in the yield. The yield has stabilized to the same as when he was practicing chemical agriculture. His produce is not certified. A few of his neighbours also practice organic farming. He is happy to have switched over to organic because it has given him peace of mind.

(Source: Kheti Virasat Mission)

GURTEJ SINGH

Village- Khurrampur, P.O. Shahpur (mehatpur) Teh. & District Jalandher, Punjab. Cell: 09915241089.

Gurtej belongs to a farming family and has been practicing farming for the past 10 years on his 9 acre farm. His farm is irrigated through canal and tube well. He switched to organic farming two years ago because he was in search of cheaper and better farming practices as compared to chemical farming. Gurtej grows wheat, maize with companion crops and rice. Jowar and bajra are grown as fodder crops. He follows the traditional farming methods as practised in Punjab and also natural farming techniques of Subhash Palekar. He uses biogas slurry and farmyard manure as inputs and herbal repellants and trap crops for pest control. He maintains one Indian hump back cow, 8 buffaloes and one mixed breed cow and claims he has had no difficulties in switching to organic practices. Excess surplus produce is sold through direct marketing and mandi. His produce is not certified. He says that when he first switched to organic the output decreased. It has now stabilized to the same as before. None of his neighbours practise organic farming.

(Source: Kheti Virasat Mission)

HARJANT SINGH S/O SH.GURDEV SINGH

Vill & Post Rai ke Kalan, Teh. & District Bathinda, Punjab. Cell: 09417620814

After practising chemical farming for 17 years Harjant Singh switched to organic farming 8 years ago because of the adverse effect of chemical farming and also for a sense of well-being and self worth. Harjant Singh has 37 acres of canal and tube well irrigated farm land and hails from a farming family. He grows wheat, maize, jowar, bajra and cotton. His farming practices have been influenced by natural farming techniques of Subhash Palekar. He uses beej amrit, ghan jeev amrita, jeev amrit and also does manual weeding. Biogas slurry is also used as organic input. He keeps sahiwal breed of Indian hump back cows and some buffaloes. He has no difficulties in practicing organic farming. Herbal repellants and trap crops are used to deal with farm pests. Surplus is sold at a premium through direct marketing. He says the output decreased in the beginning but has now stabilized. None of his neighbours practise organic farming. Harjit has this to say regarding his experience in organic farming: 'If you go with nature and treat your field as your children there is no option but for farm yields to improve. Farming naturally is as peaceful as the eyes of a new born baby.'

(Source: Kheti Virasat Mission)

HARTEJ SINGH MEHTA

Vill & Post Mehta Teh. & District Bathinda, Punjab. Cell: 09417507771

Hartej Singh Mehta belongs to a farming family with 11 acres of farmland. The farm is irrigated through canal and tube well. He has been farming for the past 25 years and switched to organic techniques 5 years ago because of the failure of chemical farming and the adverse effects of pesticides. He cultivates wheat with companion crops, cotton for commercial purposes and jowar and bajra as animal fodder for his Indian hump back cow and one buffalo. Biogas slurry and farmyard manure go in as organic inputs. Herbal repellants and trap crops are used for controlling pests. The surplus is sold at a premium directly and also through the mandi. Initially his output decreased but it has now stabilized. There are no farmers in his neighbourhood practising organic methods. Greatly influenced by the natural farming techniques of Subhash Palekar, Mehta says, 'Natural farming is pest free farming.'

(Source: Kheti Virasat Mission)

JARNAIL SINGH

Vill & Post Majhi, Teh. & District Sangrur, Punjab. Cell: 09417146066

After farming chemically for 30 years Jarnail Singh switched to organic farming 5 years ago because of zero input costs in organic practices. He comes from a farming family that owns 8 acres of farmland. His farm is irrigated through canal and tube well. He grows wheat with companion crops. Basmati rice and vegetables are grown for home use. Jowar is cultivated for animal fodder. He keeps a number of cows and buffaloes and uses biogas slurry, ghan jeev amrita, jeev amrita and farmyard manure as inputs. Crops are protected using herbal repellants and trap crops. Surplus produced is sold at a premium through direct marketing and also sent to the local mandi. Jarnail Singh says he has no problems at all in practicing natural farming and has been improving his yields continuously through innovations and developing techniques to this farmland. Initially his yield decreased but has stabilized within a couple of seasons. His neighbours too are practising organic agriculture.

(Source: Kheti Virasat Mission)

MADAN LAL

Vill & Post Bullhowal, Teh. & District Hushiarpur, Punjab. Cell: 09872092162

Madan Lal hails from a farming family and farms on 3 acres of irrigated land. He switched to organic farming 2 years ago – after 8 years of chemical input agriculture – because he was informed about safe and healthy food and the environmental consequences of chemicals. He practises traditional farming methods of Punjab alongwith the natural farming techniques as proposed by Subhash Palekar. Wheat and maize are grown with companion crops, vegetables for domestic use and jowar and bajra for animal fodder. He maintains two buffaloes, one Indian hump back cow and its calf, one goat and its two kids. Farm inputs are biogas slurry, farmyard inputs, jeev amrita, ghan jeev amrita and for pest control herbal repellants and trap crops. Surplus is sold at a premium through direct marketing and also sent to the mandi. The crop yield has stabilized after an initial setback. None of his neighbours practise organic farming. The problem he faces just now is lack of farm labour, weeds and pest control. He believes that natural farming is the farming of the future.

(Source: Kheti Virasat Mission)

VINOD JYANI

Jyani Natural Farm, Vill & Post Katehra Teh. Fazilka District Ferozepur, Punjab. Ph.: 0163 823302, Cell: 0941723325, Email: vinod-jyani@yahoo.co.in

Vinod Jyani is a big farmer with 130 acres of farmland. He comes from a farming family and has a farming experience of 20 years. He switched to organic farming 4 years ago. His farm is irrigated by canal. Continuous use of chemical sprays, increasing quantity of chemical inputs required and the ill effects on the health of his staff involved in spraying poisonous pesticides influenced his decision to switch to organic farming. His farming practices have been influenced by Subhash Palekar's methods. He uses jeev amrit, biogas slurry, farmyard manure etc. as inputs. Homemade biopesticides and trap crops helps in pest control. He maintains 40 Indian breed cows for supply of organic inputs. All his produce is sold at a premium through direct marketing. Initially his output decreased but focused personal involvement and the use of local seeds, trap crops, nitrogen fixing trees and plants and inter cropping has helped him to get premium yields. He says that interaction between farmers is crucial to the growth, spread and promotion of organic farming. He grows rice, wheat, maize, jowar, bajra, cotton, sugarcane and also maintains citrus orchards.

(Source: Kheti Virasat Mission)

SWARAN SINGH

Village Karamgarh Satran, P.O. Sardargarh Teh. & District Bathinda, Punjab. Cell: 09814963883

Swaran Singh comes from a farming family with 6 acres of canal and tube well irrigated land. After farming chemically for 38 years he switched to organic farming 4 years ago because he was in search of a natural and earth friendly farming techniques. He grows wheat with companion crops, mustard, green gram, black gram, cotton, sugarcane. Jowar is grown for animal fodder and vegetables are cultivated for domestic use. He has been following traditional organic practices of Punjab and has incorporated some natural farming techniques of Subhash Palekar into his practices. He keeps one Indian hump cow, one ox and one buffalo. Biogas slurry, ghan jeev amrita, jeev amrita, FYM are the farm's inputs. Herbal repellants and trap crops keep away pests. His only woe is unwilling labour. Farm surplus is sold at a premium through direct marketing and the mandi. Swaran Singh says that the key to successful organic farming is hard work. Initial decrease yields were overcome by persisting with natural practices. He says FYM does not make too much of a difference but is responsible for increasing and stabilizing yields during the initial stages of conversion. To him natural farming is all about passion and a way forward and suggests that farmers should use farmyard manure in greater proportion during the conversion period and work towards increasing yields only through natural techniques.

(Source: Kheti Virasat Mission)

TILAK RAJ

Vill & Post Khui kherha, Teh. Fajilka, District Firozpur, Punjab. Cell: 09417338131

Tilak Raj switched to organic farming two years ago after practising chemical agriculture for 8 years. He hails from a farming family with 25 acres of canal and tube well irrigated farm land. His reason for switching to organic was that chemical farming is full of poison and is anti-religion. He grows wheat with companion crops, mustard, cotton. Vegetables are grown for domestic use, jowar and bajra for his animals. He keeps two Indian hump back cows. The farm is based on natural farming techniques of Subhash Palekar. Biogas slurry ghan jeev amrita, jeev amrita and FYM are the farm's inputs. Herbal repellants and trap crops help to protect crop from pests. His farm faces hurdles in the form of unwilling labour, depleting soil fertility and insects. Surplus is sold at premium through direct marketing and mandis. He says his yields decreased initially but recovered stability with use of farmyard manure. He says natural farming is stress free farming but would appreciate if established natural farmers can extend assistance to farmers who have recently ventured into organic practices.

(Source: Kheti Virasat Mission)

UPKAR SINGH

Vill & Post Chakk Desh Raj, Teh. Philaur, District Jalandhar, Punjab. Cell: 09463360294

Upkar Singh hails from a farming family. After 10 years of chemical farming he switched to organic 4 years ago because of the increasing demand for chemical free farm produce. His 4 acres farm is irrigated by canal and tube well. He grows wheat, maize with companion crops, rice, sugarcane, green gram, mustard and basmati. Vegetables are grown for domestic use. Bajra and varsim are grown for animal fodder. On farm he has incorporated natural farming techniques of Subhash Palekar into the traditional farming wisdom of the Punjab. Biogas slurry, ghan jeev amrita, jeev amrita, FYM, vermicompost etc., are the farm's inputs. Herbal repellants and trap crops are used for pest control. He maintains two Indian hump back cows, two holestin breed cows and a calf, one buffalo, one goat and its kids. Surplus is sold at a premium through direct marketing and the mandi. Initial decrease in production has now recovered. His neighbours too practice organic farming. He says organic farming means dedication and the willingness to work with ones hand. He is convinced that natural farming is the best way one can protect nature, heritage, traditional wisdom, environment and mother nature.

(Source: Kheti Virasat Mission)

BHAKAR ORGANIC FARM

Kalalwala, Teh. Talwandi Sabo, District Bathinda, Punjab.
Ph.: 01655 218375, Cell: 09417337602

(Source: Brochure)

Punjab officialdom's roundabout 'no' to organic farming

The Punjab State Farmers Commission, set up by the government of Punjab has a mandate to examine and review the status of agriculture and allied sectors in the state and suggest measures of economically viable and ecologically sustainable agriculture development.

In its recent report of December 2008 titled 'Organic Farming- Its Necessity: How far it can go?' the Commission talks of the genesis of intensive high yielding agriculture in the state and notes that Punjab accounts for 74% of rice and wheat produced in India.

Stating that organic farming is largely dependent on green manure and inputs from extracts of cow dung and cow urine, the report says as per government data, Punjab has roughly 2 animals per hectare. Total livestock population is less than 9 million for the net sown area of about 4.2 million hectare. To apply full dose of recommended organic nutrients to wheat and rice it would require about 17 animals per hectare. It also highlights that 80% of the rice straw worth Rs. 250 crores of nutrients is burnt annually in Punjab. The total farm yard manure is hardly sufficient for 15% of wheat and 20% of rice production and if one assumes that the state opts for organic then the reduction in food grain production would be a serious threat to national food security.

In conclusion, its recommendation to the government is to adopt organic practices for the cultivation of vegetables and for production of pesticide free egg, meat and milk products.

The report has come under strong criticism from social groups and NGOs in Punjab and from other states across the country.

On the other hand the official machinery is busy organising university level debates to stick to its stand. Agri-Scientists are regularly being quoted in the press with statements of inadequacy and inability of Organic Farming or non chemical agriculture to meet food needs.

It is not at all surprising, given the fact that synthetic chemical based agriculture in India found its greatest patron in the farmers of Punjab.

Habits die hard, sometimes even at the cost to life !

[The Punjab State Farmers Commission, Plot No. 53, Opposite Bassi Theatre, Phase-2, S.A.S. Nagar, Mohali -160 055, Punjab. Ph. 0172 6570555, 2270092, Tele/ Fax: 0172 2270093, Email: farmercomm@punjabmail.gov.in

(Reference: 'Organic Farming – Its Necessity: How far it can go?' and media reports.)

North & North West India

Uttarakhand

Organic Farms

TARAI ORGANIC FARMERS' AMITY

13, Kalyani View, Rudrapur (Udham Singh Nagar), Uttaranchal. Ph: 05944-243342, Cell: 09412-645910, Email: johal_bhupi@rediffmail.com, changes342@yahoo.com

Contact: Bhupender Singh Johal

TOFA is run by a small group of enthusiastic organic farmers who supply their own farm products and deal only with other farmers and producers whose products are certified. They guarantee that all organic products are strictly based on the organic farming code of conduct and are produced maintaining the highest quality control standards.

Products: Wheat flour, wheat dali; rice basmati (polished/unpolished), Dehraduni, Pusa, rice tilak chandan; dals whole and split: urad (maha), moong, masoor, chana;black chana, rajma, soyabean; whole dals: lobia (white), arhar, moth; gur (plain/herb/spices), shakkar, natural sugar, chili (flakes and powder), rock salt, dhania (whole and powder), turmeric powder, methi (fenugreek), garlic, ginger, potatoes, onions, mustard (whole and oil), honey, herbal teas, amla products. Essential oils, mentha oil and dried leaves, peppermint oil and dried leaves, lemongrass oil and dried leaves, tulsi oil and dried leaves, tagetes minuta oil (on order).

Cosmetic and herbal products: Apricot soaps (with different herbs), oil, creams and scrubs. Aloevera products.

(Source: Brochure)

PAN HIMALAYAN GRASSROOTS DEVELOPMENT FOUNDATION

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kpaul@grassrootsindia.com
Website:www.grassrootsindia.com

The Pan Himalayan Grassroots Development Foundation is established as a non-profit voluntary organization under the Societies Registration Act (1860) at the office of the Registrar of Societies, Delhi since November 1992. The primary aim of Grassroots is to initiate peoples action at the grassroots for restoration of ecological security in languishing river basins through holistic mountain development programs, in order to improve the quality of life.

Over the past fifteen years, Grassroots has been able to evolve a holistic intervention strategy which channels resources - managerial, technical and financial - directly to people and associations of the communities, working at the village/watershed level.

The emphasis is on self-help participation and the belief that average villagers have the desire, the right and the capability to promote their own welfare and prosperity and to participate in decisions that affect their lives.

Also implied in the mandate of Grassroots and incorporated in its approach and methodology is promotion of the entrepreneurial spirit - the belief that people can determine their own destiny, establish goals, take risks and invest their time and energy to achieve their aspirations for a better life.

One of the prime areas of concern is the restoration of Gagas river basin, wherein environmental degradation has led to impoverishment of more than 300 communities spread over 500 square kms. As an integral part of this eco-restoration effort, communities are being motivated to adopt the participatory guarantee system for certification of traditonal farming systems as Organic, with the idea of establishing a bridge between farm-gates and consumers and thereby sustaining traditional farming practices.

DR. J.C. GUPTA

Secretary, Pashu Palak Vikas Sansthan, Mata Mandir Road, Kashipur, U.S. Nagar – 244 713, Uttarakhand, Phone: 05947 224484

Gupta writes that in his area farmers burn paddy straw, wheat straw, sugarcane leaves etc., which are valuable organic matter to the soil. He has instead turned his ten acre sandy soil into clay soil by adding cow dung, paddy ash, sugarcane press mud etc. He practises organic farming.

(Source: Communication with OIP)

INSTITUTE OF HIMALAYAN ENVIRONMENTAL RESEARCH AND EDUCATION (INHERE)

Contact person: Bharat Bisht
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Website: www.inhereindia.org

INHERE is a well organised NGO. Its organic farmers are certified and it has a number of products on the market. Check its website for further details.

ORGANIC CERTIFICATION IN UTTARAKHAND FOLLOWING THE PARTICIPATORY GUARANTEE SYSTEM (PGS)

Uttarakhand has 136 organic farmers registered through 11 farmers' local groups. Graasroots is the PGS Organic Facilitation Council that works through PHGDF of Uttaraknand.

Details of these local groups and their organic produce is posted at the www.pgsorganic.in

Uttar Pradesh

Interview: Dr. Bharatendu Prakash

Dr. Bharatendu Prakash left the Indian Institute of Technology, Kanpur in 1974 to work with his newly set up voluntary organization, Vigyan Shiksha Kendra. Dr. Prakash heads the North India office of the Organic Farming Association.

Address: Kisan Vigyan Kendra, Tindwari P.O., Banda District – 210 128 Uttar Pradesh. Cell: 094525028251. Email: ofai.north@gmail.com, vskbanda@yahoo.com

Other India Press: Could you tell us how you came into the organic farming scene in India?

Dr. Bharatendu Prakash: My wife Shobhana and I left Indian Institute of Technology Kanpur in 1974 to work voluntarily through our newly set up voluntary organization Vigyan Shiksha Kendra, towards the following objectives:

- To help build a scientific attitude amongst people and prepare an environment conducive to the popular science movement (PSM) in the state of Uttar Pradesh.
- To work for conscientization, education and development of the people.
- To develop and popularize appropriate science and technology in the villages and to organize a proper technology delivery system, etc.

Our initial work started in schools, trying to inculcate discovery-oriented approach to science-teaching. Working in rural schools and interacting with villages we came to understand the various problems of farmers, artisans & craftsmen, traditional healers, landless households and women. This was an opportunity for us to study the growing impact of chemical fertilizers and agriculture slowly turning commercial. During 1975-1980 we experimented in our own farm and discovered that chemicals affect health of the soil and deplete the bio-diversity on the farm.

That turned us towards thinking of organic and interacting with elderly farmers and their traditional practices. In the year 1980 we started working on organic farming ourselves even though at that time many farmers as well as administrators were not prepared to listen to us. Persons like Shri Shailendra N. Ghosh and Shri Korah Mathen proved guiding friends with whom we interacted deeply on such issues. Later we met Dr. R.L. Richharia who had established a good indigenous gene bank of rice at Raipur and was against the way science was forced on agriculture. He was a great inspiration to us.

In 1986 we started a project on documentation, development & dissemination of traditional rural technologies supported by CAPART under which organic farming was one important basic field of work. This project for documentation covered entire north India. Our report was ready by 1989 which compared traditional with modern technologies.

Shobana and Dr. Bharatendu Prakash

In 1991-92 we started the first vermicompost unit at our farm centre which was later named as Kisan Vigyan Kendra – becoming an important resource centre for experimentation, training, demonstration, production and distribution of various relevant seeds. We grew in contacts with all the groups in India working on organic farming and also had an opportunity of meeting and interacting with M. Fukuoka of Japan who visited Kanpur on our request. Thus Organic Farming became the most important area of our work from the nineties.

OIP: What is the status of organic farming in UP, since you now spend your time in both MP and UP?

BP: I have been concentrating on the region called Bundelkhand which I belong to. Unfortunately this area is split into two political entities U.P. & M.P. that is why I have to move here & there for studies, work, and interaction with people and explore the possibility of transformation in rural areas.

Talking about U.P., though the Department of Agriculture and the universities tried their best to convert entire agriculturalists to follow the GR techniques, there remained some pockets/regions where organic farming survived because of unique topography, the black cotton soils (locally termed as Mar or Marwa), lack of resources including irrigation, small land holdings, poverty amongst farmers and people sticking to their traditional methods. Bundelkhand region of U.P. as well as M.P. is one such region where quite a large area has remained more or less organic. In this region, soils have deteriorated much less and many indigenous traditional seeds have survived.

The Dwaba (region lying between Yamuna and Ganga) has been productive since ages and because of the perennially flowing canals providing full irrigation, fell badly to adopting GR techniques. The result is that natural soils are not left there at all. The whole area turned chemical intensive, polluting atmosphere and soils as well as water bodies including rivers.

Similar conditions resulted in Poorvanchal (the region east of Allahabad in U.P.) because rivers flowing there including Ganga were used intensively in spreading irrigation which, added with chemicals (fertilisers as well as insecticides-pesticides), turned the entire region unnatural.

Organic farming in these areas became an individual activity only. No institutions or organizations supported it. During the eighties, Shoorvir Singh in Bijnore (west UP) adopted organic farming which was criticised by farmers of the region and others because he was swimming against the current. But he continued and later influenced many farmers of western UP as well as intellectuals and environmentalists.

In spite of influence of Pantnagar in northern U.P. (which is now a separate state Uttarakhand) the Himalayan region continued its traditional farming. Very important environmental movements like CHIPKO promoted by Shri Sunderlal Bahuguna and Shri Chandi Prasad Bhatt, etc., and later the Beej Bachao Andolan of Shri. Vijay Jardhari and friends contributed to creation of congenial atmosphere for organic traditional farming. These movements influenced many farmers of other regions too.

OIP: Is the adaption of organic farming significant in the state, if yes, what has led to this change and since when has this trend set in?

BP: I cannot term the present trend of farmers turning towards organic farming here as significant. But the interest which is being shown by a section of farmers is out of compulsion as the soils of the regions where extensive chemical fertilizers were used along with excess of irrigation have turned unproductive. There have been numerous cases where farmers have committed suicide because of pressure of debt and increasing weather uncertainty all over.

In other areas where farmers are poor, resource deficient and where the market is exploitative, they are slowly turning towards organic. It still requires a lot of effort as there is hardly any supportive atmosphere for them.

OIP: Shobhana ji and your self have been relentlessly travelling across the North Indian States promoting organic, doing trainings, attending seminars, etc. What is the overall scene in northern India? Unlike the South which is well documented or rather we have some idea of what is happening, could you enlighten us on the scene in the North?

BP: Our tours and efforts along with our OFAI-publication Shashya Shyamala has helped in making a congenial atmosphere for organic farming here in North India. The NIOFC at Jhansi brought many people together at one platform. Contacts after that in U.P., M.P., Rajasthan, Bihar, Uttarkhand, Chhatisgarh and Jharkhand etc., have grown. Our trainings under OFAI-OFS have helped in expanding our base. Slowly farmers are getting involved to understand the PGS system. In M.P. and U.P., we are hopeful a large number of farmers will come under the PGS banner. However, to achieve worthwhile and significant success much effort needs to be made in the coming years.

OIP: Is the small and marginal farmer self sufficient in UP/ North India? Has he considered taking up the practice of organic?

BP: Not at all. The GR led chemical and machine intensive farming have brought in an inferiority complex in their minds. Our efforts these days are directed towards telling them that it is organic and sustainable farming that can make them happy, un-indebted and independent. The whole scenario, including Government's mindless push towards promoting contract farming is very dangerous to the small and marginal farmers. Wherever efforts have been made changes are taking place. The pace is slow.

OIP: North has a large chunk of tribal people, traditional communities practising many traditional agricultural practices, what is the situation there?

BP: Tribal and traditional societies/ communities would still like to follow their traditional ways but slowly this section is being pushed out of their 'forest' homes because of projects like dams, protected forests, coal-mines, granite and diamond mining, etc. Rivers are being considered for damming or diversion. The forest cover is depleting or has become inaccessible. All this is affecting the normal life of traditional communities. They are being pushed to the brim. Such people are being forced to migrate and are reduced to turning into urban cheap labourers and slum-dwellers.

OIP: What about the Govt in UP and other states, are they seriously looking at policy, support etc. to organic farming?

BP: Governments even in states that have declared themselves 'ORGANIC' are yet to follow the principles of organic farming and are limited to NADEP or vermicomposting practices. The conservation of seeds, recognition of traditions, considering farmers also as knowledgeable persons, the health of people as well as the environment has yet to hold their attention. Thus even in Uttarakhand, river Ganga is being dammed, tunnelled at hundreds of points before reaching the planes of west U.P.

There is very little concern in the official agriculture sector and they are giving only lip-service.

OIP: How would you sum up your experience in this field, having been with it now for many years?

BP: We are not discouraged. The weather-uncertainties, the lack of resources, the rising cost of chemicals as well as petroleum, the debt driven suicides and the lowering productivity of the soils, all these factors are forcing even resourceful farmers to listen to our voice now; making them think twice on chemical ways of farming.

There is of course, a crisis of availability of appropriate seeds for organic farming. An intensive effort is needed to mobilize farmers to conserve, grow and multiply indigenous seeds organically in each village so that seeds are available in plenty.

The area under organic is slowly and steadily increasing. Governments as well as private institutions are open to listening and scientists are realizing their mistakes. All this makes the future of sustainable farming bright.

OIP: What do you see as tasks to be undertaken in the immediate future if the organic movement has to be adapted in significant measures in UP, North India and the entire country?

BP: Following programs are very essential:

1. Setting up regional resource centres of organic farming at each agro-climatic regions/pockets.

2. Intensive experimentation coupled with comparative studies with chemical farming.

3. Training of farmers in all the dimensions of comprehensive organic/ sustainable farming and enhanced bio-diversity.

4. Production of seeds/ seed-lings / plant-materials appropriate to organic farming by involving farmers only, at regional levels.

5. Training and organizing local level processing in order to enhance the value of products.

6. Organizing marketing at local, regional, and national levels so that organic farmers are not exploited in general markets.

7. Mobilizing, educating and making the consumers aware of health hazards due to unhealthy food grown by using chemicals.

8. Pressurizing the governments and the business houses to force the producers of chemical intensive foods to provide certificate of health rather than certifying organic farmers who have been traditionally growing healthful foods for keeping a society in good health since ages.

KISAN VIGYAN KENDRA

(**OFAI's North India Office**)

Badausa road, Atarra (Banda) 210 201, Uttar Pradesh.
Phone: 05192 - 224587

Dr. Bharatendu Prakash, Kisan Vigyan Kendra, Tindwari,
Banda 210 128, Uttar Pradesh. Phone: 05192 – 292218
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KVK works for integrated organic farming, including horticulture, animal husbandry, cultivation of spices, herbs etc. as part of its programme. VSK has been working on all aspects of organic farming both at the level of experimentation as well as extension work. Its work includes identification and collection of seeds, improvement of seeds, preparation of various composts, vermi-composting and organic storage of grains and simple processing of various foods.

KVK organises various relevant trainings of farmers, women and school going children. It has initiated work on resource-integration and bio-intensive farming to make small/ marginal farms remunerative. KVK is a 4 acre research farm as well as a goshala. Dr. Bharatendu Prakash, Director, is a member of the National Steering Committee of the Organic Farming Association of India and has organized training courses for organic farmers on behalf of OFAI in his area. The Hindi edition of Organic Farming Association of India's newsletter: Living Fields, *Shashya Shamala* is published by KVK with a circulation of 1,000 in the Hindi speaking belt of India.

(Source: Communication with OIP)

Interview: DR. SHIRAZ WAJIH

OFAI: What is the present situation in your region with regard to organic farming and the organic farming movement?

SW: The area has been dominated traditionally by small marginal farmers who practise agriculture with minimum external inputs. Hence, the use of inorganic inputs, which are cost intensive, has been very low compared to other parts of U.P. and India. Farmers, however, started using synthetic fertilizers and pesticides during the 70s and 80s. Small farmers are generally returning or at least searching now, for viable organic inputs. Sardarnagar and Campierganj block of Gorakhpur district can be specially mentioned in this regard. The number of organic farmers though presently few in number is increasing gradually.

OFAI: Which are the best examples of organic farms in your region?

SW: The best examples of organic farming in our region are:

- Mr. Deep Narayan, Gulharia, Campierganj, Gorakhpur
- Mrs. Dhaneshari Devi, Awadhpur, Sardarnagar, Gorakhpur
- Mr. Koel, Janakpur, Campierganj, Gorakhpur
- Mrs. Ramdai, Lauharpurwa, Campierganj, Gorakhpur
- Mr. Ramdhani Maurya, Alamchak, Campierganj, Gorakhpur
- Mr. Ramkamal, Sarpataha, Campierganj, Gorakhpur
- Mrs. Prabhawati Devi, Dudhai, Sardarnagar, Gorakhpur
- Mr. Paras Nishad, Awadhpur, Sardarnagar, Gorakhpur
- Mr. Sadhushara, Sheolahia, Campierganj, Gorakhpur
- GEAG's experimentation site, Campierganj, Gorakhpur

OFAI: Are you from a farming background? What prompted you to go in for farming/organic farming?

SW: Most of us come from farming communities. The pathetic situation of small and marginal farmers in eastern U.P. motivated us to go for farming. Increasing dose of chemicals, deteriorating soil health and the susceptibility of crops to pests and diseases made us adopt organic farming practices.

OFAI: What do you grow? What has been your experience?

SW: We mainly grow paddy, wheat, banana, sugarcane, potato and seasonal vegetables. In case of organically produced vegetables, we have observed that they are highly resistant to pests and diseases, also the size and quality of the product improves in terms of nutritive value, appearance, storage ability and taste.

OFAI: Did the yield drop when you changed from inorganic to organic farming?

SW: No, there wasn't any drop when we made the shift from inorganic to organic because we took care that the proper quantity of organic manure was applied.

OFAI: Is your farm totally organic or do you continue the use of chemicals for some crops?

SW: The use of chemicals for some crops is still prevailing because in certain crops, there is no substitute for chemical pesticides. To name a few, we failed to control the fruit-borer of arhar (pigeon-pea) with the help of bio-pesticides. Then, we applied chemical pesticide but the result was still not very impressive. However, I think it is possible to totally eliminate the use of chemicals from the cultivation process by increasing application of organic supplement as well as biomass production and increasing the number of cattle. IPM supplements also have to be provided but in a phased gradual manner – without affecting the production level.

OFAI: What are the techniques and methods that you are employing for organic farming?

SW: We are applying LEISA (Low External Input for Sustainable Agriculture) techniques like CPP, NADEP, vermicompost, vermiwash, trichoderma, neem oil cake, mustard cake, etc.

OFAI: Is there an adequate market for organic produce?

SW: Unfortunately there is no local market for organic produce but there is good demand for export of organic farming products. This will definitely benefit the organic farmer greatly. In any case, the decreased cost of production is an incentive for a farmer to shift to organic farming.

OFAI: Why are more farmers not converting then to organic?

SW: This is because the total requirement of organic matter for the farm is not available with the farmers as many do not have animals to provide the organic manure.

OFAI: Have multinationals marketing wonder seeds and chemicals had a significant impact on the direction of agriculture in your region? What is the present trend?

SW: Yes, they had significant impact earlier, but this has now decreased because the produce cannot be used as seed.

OFAI: What are the effects of chemicals used by farmers on the neighbouring farms? How do you protect your farm from contamination through air and soil/water?

SW: Chemicals sprayed by farmers on their farm or applied through water, badly affects neighboring farms as well. We are trying to convert the neighboring inorganic farms into organic farms and also separate our irrigation system from theirs so as to avoid water contamination.

OFAI: Do you think enough is being done to make farmers aware of the dangers of chemical farming? Is knowledge of alternative farming techniques easily available?

SW: Not enough is done to make farmers aware of the dangers of chemical farming. It is the major drawback of the farming system in our region or U. P. as a whole. At the same time the knowledge of alternative farming techniques is not easily available. We are trying our best in that direction but we too are bound by certain limitations.

OFAI: Are farmers here concerned with preserving traditional varieties of plants/seeds? Are they involved in preserving their rights and heritage?

SW: In our region, there is a mass drive to avoid hybrid seeds, and seed campaigns are also organized to preserve our traditional varieties of plants/crops. In U. P. there is the Laghu Seemant Krishak Morcha (LSKM) to protect farmers' rights and heritage by advocating issues at the policy level.

OFAI: What do you foresee in the future for organic farming?

SW: Organic farming, in its strictest sense, is a difficult proposition considering the present trends/situations. However, growing interest amongst majority farmers indicate the likelihood of increase in conversions to organic farming. For faster transformation, it is necessary that the required extension and information systems are put in place and essential requirements of organic inputs are also ensured at local level. Adequate research in local agro-climatic settings for organic technologies is also important.

SHOOR VIR SINGH

Village Chanda Nagli, P.O: Haldaur, Distict Bijnore – 246 726, Uttar Pradesh. Ph.: 01342 260840 Cell: 09719148999

In 1976, Shoor Vir Singh, a youth educated in microbiology, disinterested in taking up any job, decided to adopt his family occupation of farming and returned to his village Chanda Nagli in Bijnore district of west U.P. He had 11 acres of scattered land on which he started his work. Due to the influence of western Uttar Pradesh where so-called scientific agriculture for large production was considered ideal, he too was influenced to go in for this method. He was especially enamoured by the Green Revolution's propaganda and used to experiment with all the new things that were coming into the market, be it chemical fertilizers, or pesticides. Not only that, at that time, he even impressed upon others the use of these new products. Because of his educational background and status in society, the local agricultural officers also made special efforts to influence him and through him, other farmers.

Being by nature, a nature lover, and with each passing day of working in the field, he slowly began to see the interconnectedness between different organisms, micro-organisms, plants, animals and trees. In these observations he found that some insects eat other insects that harm crops and therefore those particular insect-eating insects are really great friends of farmers. Slowly he realized that micro-organisms help soil to keep up its fertility and thus are perennial sources of potential high productivity.

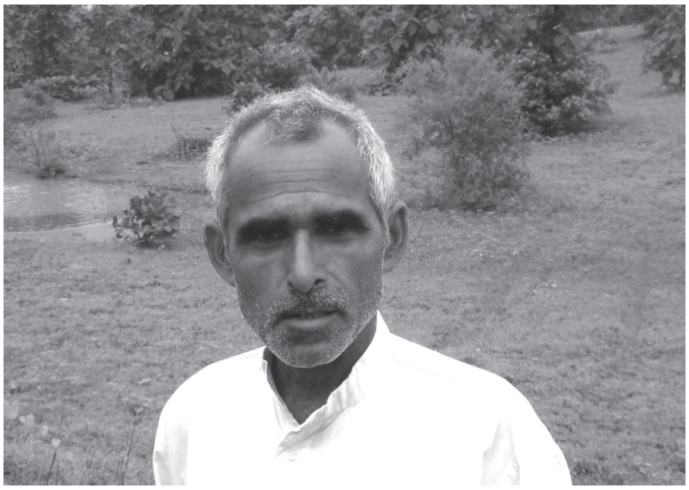
One day in 1983 when he sprayed dimecron pesticide on his crop of chana (gram) he found that along with the enemy insects, friendly insects were also dead. Moved by this, and feeling that he was responsible for killing them; he decided finally not to apply any chemicals in his farm. Around the same time, he came across environment friendly alternatives to chemical farming. He was particularly influenced by Japanese scientist turned farmer M. Fukuoka and earmarked three acres of his farm to adopt Fukuoka's principles. The climate and land conditions, however, were not supportive to such experimentation.

In all his initial efforts his elder brother Dr. Yashpal Satya, Professor at IIT Delhi, Dr. Santosh Satya and the Research wing of Gandhi Peace Foundation, Delhi provided the required moral and material support.

Alternatives Worked Out:

Soon he started to farm in his own unique way which he called PRAKRITIK PURAK KHETI, i.e., Natural Complimentary Agriculture (NCF). He consolidated his entire land into a single stretch and put it under NCF practice.

The NCF principle is as follows: Since Nature in itself is complimentary, full of diversity, balanced, productive, multiplicative, energetic, sensitive, conscious, transformative, autonomous, and sustainable, all the plants, trees and living



Shoor Vir Singh from Bijnore is one of UP's earliest and most experienced organic farmers

organisms are interdependent on one another. Their inter-relationship together keeps the environmental balance. There is no such thing as a harmful living creature or a weed. It is only our way of looking at some of its characteristics that makes them seem harmful/undesirable to us.

For example, termites are normally considered harmful to crops, but an interesting experiment in his farm proved otherwise. He spread cow dung, dried grass and leaves in the form of a bed and spread on top of it mud filled with termites. To his surprise, in a week's time, all of it had turned to compost unlike normal composting which requires not less than three months. A bumper sugarcane crop was later harvested from this patch of land.

Similarly, weeds were studied by him for a long time through growing many different plants and grasses in his land. Some were good as fodder while some others were excellent for mulching and yet others were good for composting. He did not find anything that was not of some use to his farm. His experiments with Bio-Dynamic practices have also given excellent results.

Though he grew slowly towards success, his farm was laughed at for nearly two decades. For the past decade, he is being accepted, respected and approached by many farmers for learning basic techniques.

Presently on his farm, all organic wastes is composted, crops are grown within crops ie. spices and flowers are grown along with the main crops, birds are invited to assist in farming by scattering grain brought from home, all farming activities are properly planned and as an extension to the entire activity farmers are motivated to realize, acknowledge and accept that they are quite wise.

Benefits Accrued to Self and Others:

Family members as well as cattle is healthy - no medication is needed.

The farm has become totally free from outside inputs, energy needs are attempted to be met by solar, biogas and bullock-power.

Soil is getting richer, waste is composted, the villages look cleaner.

The ups and downs of the market do not affect him,

Alternative marketing has been initiated at Bijnore under the aegis of Sarva Shubh Prakritik Utpad Bikree Kendra (Sale Centre of Natural Products Benefitting All) which is associated with and receives its produce for sale from organic farmers. The produce is sold at a 10-20% premium price.

Farmers of surrounding villages, Govt. Officials,organic traders and consumers of Delhi and elsewhere contact them regularly.

Self-employment opportunities within the villages is apparent.

Farmers are getting training in waste management through composting, organic crop-production, processing etc.

Future Plans:

Promote Organic Sustainable Farming throughout the state,

Efficiently run the Kisan Vidyalaya allotted to them by the Government,

Strengthen the marketing of Natural and Organic products,

Popularize alternative energy devices,

Organise organic farmers in the state and associate them with OFAI.

(Source: Communication with OIP, Translation: Dr. Bharatendu Prakash)

Organic farmers associated with Shoor Vir Singh:

1. Dr. Prakash, Surgen Hospital Civil Line, Bijnoor, Uttar Pradesh. Cell: 9837033451
2. Shri. Samar Pal Singh, Maujipur Khari, Bijnoor, Uttar Pradesh. Cell: 9411228612
3. Shri. Brahmapal, Agari, Bijnoor, Uttar Pradesh. Cell: 9411224465
4. Shri. Shishram, Rashidpur Gadi, Bijnoor, Uttar Pradesh. Ph.: 01342 251770
5. Shri. Tipendra Malik Bhai, Rajipur, Uttar Pradesh.
6. Shri. Rajeev Kumar, Nagaljad Haldor, Bijnoor, Uttar Pradesh. Cell: 9411952462
7. Shri. Chirpalji, Nagaljad Haldor, Bijnoor, Uttar Pradesh. Cell: 9456283122
8. Shri. Kanchanveer, Chakarasi, Amroh, Uttar Pradesh.
9. Shri. Ashok Sirohi, Bilari, Muradabad, Uttar Pradesh.

SHRI BAL KARAN PATEL

Palhari Organic Farmers' Group, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh.

Shri Bal Karan Patel represents a farm family cultivating 10 acres dry land (rain fed). He has been farming organically for the past four years, growing: chana (gram), masoor , alsi (linseed) and sarso (mustrard). Surplus products are sold to visiting traders within the village or taken to Baberu (sub-division) market. His wife works with him on the farm.

(Source: Bhaiya Lal Patel, Palhari Sajiv Krishi Samiti)

SHRI BHAIYA LAL PATEL

Palhari Sajiv Krishi Samiti, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh

Shri Bhaiya Lal Patel represents a farm family cultivating 3.25 acres dry land (rain fed). He has been farming organically for the past four years. He grows gehu (wheat), chana (gram), masoor, alsi (linseed) and sarso (mustard). The animal dung from four cattle heads on the farm is used for composting. Surplus products are sold to visiting traders within the village or taken to Baberu (sub-division) market. His family members work with him on the farm.

(Source: Palhari Sajiv Krishi Samiti, Banda, V.P.)

SHRI OM PRAKASH PATEL

Palhari Sajiv Krishi Samiti, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh

Shri Om Prakash Patel represents a farm family cultivating 2 acres dry land (rain fed). He has been farming organically for the past four years. He grows chana (gram), masoor , alsi (linseed) and sarso (mustrard). He owns three cattle heads, the dung is used for composting for the farm itself. Surplus products are sold to visiting traders within the village or taken to Baberu (sub-division) market. His wife works with him on the farm.

(Source: Bhaiya Lal Patel, Group Convenor , Palhari Sajiv Krishi Samiti, Banda, V.P.)

SHRI SHIV VILAS PATEL

Palhari Sajiv Krishi Samiti, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh.

Shri Shiv Vilas Patel represents a farm family cultivating 8 acres dry land (rain fed). He has been farming organically for the past four years. He grows chana (gram), masoor, alsi (linseed) and sarso (mustrard). The animal-dung from the three cattle on farm is used for composting. Surplus products are sold to visiting traders within the village or taken to Baberu (sub-division) market. His wife works with him on the farm.

(Source: Bhaiya Lal Patel, Group Convenor , Palhari Sajiv Krishi Samiti, Banda, V.P.)

SHRI PHOOL CHANDRA PATEL

Palhari Sajiv Krishi Samiti, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh.

Shri Phool Chandra Patel represents a farm family cultivating 4 acres dry land (rain fed). He has been farming organically for the past four years. He grows chana (gram), masoor, alsi (linseed) and sarso (mustrard). He owns three cattle, their dung is used for composting. Because of being a small family having very few hands to work he has to rely on hired tractr for tilling the land. Surplus products are sold to visiting traders within the village or taken to Baberu (sub-division) market. His wife works with him on the farm.

(Source: Bhaiya Lal Patel, Group Convenor, Palhari Sajiv Krishi Samiti, Banda, V.P.)

SHRI SHEO MOORAT PATEL

Palhari Sajiv Krishi Samiti, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh.

Shri Sheo Moorat Patel represents a farm family cultivating 10 acres dry land (rain fed). He has been farming organically for the past four years. He grows chana (gram), masoor, alsi (linseed) and sarso (mustrard). The cow-dung from four cattle is used for compost. Because of shortage of working hands he has to rely on hired tractor for tilling the land. Surplus products are sold to visiting traders within the village or taken to Baberu (sub-division) market. His wife works with him on the farm.

(Source: Bhaiya Lal Patel, Group Convenor , Palhari Sajiv Krishi Samiti, Banda, V.P.)

SHRI SHEO NARAIN PATEL

Palhari Sajiv Krishi Samiti, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh.

Shri Sheo Narain Patel represents a farm family cultivating 4 acres of dry land (rain fed). He has been farming organically for the past four years. He grows chana (gram), masoor, ,alsi (linseed), sarso (mustard), arhar, gehu (wheat), fruits and vegetables. Presently he keeps a pair of bullocks and one cow. The cow-dung is used for composting for the farm itself. Surplus products are sold within the village and to visiting traders or taken to Baberu (sub-division) market. His family works with him on the farm. (Source: Bhaiya Lal Patel, Group Convenor, Palhari Sajiv Krishi Samiti, Banda, V.P.)

SHRI JUGGI LAL

Palhari Sajiv Krishi Samiti, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh.

Shri Juggi Lal represents a farm family cultivating 9 acres of dry land (rain fed). He has been farming organically for the past four years. He grows chana (gram), masoor, alsi (linseed) and sarso (mustrard). The dung obtained from three cattle on the farm is used for composting. He relies on hired tractor for tilling the land. Surplus products are sold to visiting traders within the village or taken to Baberu (sub-division) market. His wife works with him on the farm.

(Source: Bhaiya Lal Patel, Group Convenor, Bhaiya Lal Patel, Group Convenor, Palhari Sajiv Krishi Samiti)

SHRI RAM PRATAP

Palhari Sajiv Krishi Samiti, Village/P.O. : Palhari via: Baberu, Dist. Banda, Uttar Pradesh.

Shri Ram Pratap represents a farm family cultivating 7 acres which is dry land (rain fed). He has been farming organically for the past five years. He grows chana (gram), masoor (lintel), alsi (linseed) and sarso (mustrard). The cow-dung from on farm animals is used for composting. He uses a hired tractor for tilling the land. Surplus products are sold to visiting traders within the village or taken to Baberu (sub-division) market. His family works with him on the farm.

(Source: Bhaiya Lal Patel, Group Convenor, Palhari Sajiv Krishi Samiti)

SAUBHAGYA VASTU KENDRA

Opp. Krya Vikrya Kendra, Sadar Bazar, Goolar naka,
Banda, Uttar Pradesh. Phone: 05192 – 227368/ 272022,
9415143598 (M)

Contact Person: Prem Singh or Manveeya Siksha Sansthan, Village & P. O. Barokher Khurd, Banda, Uttar Pradesh.

Saubhagya Vastu Kendra markets SWAGRAMI Natural Products. These products are purely organic and natural and they have been collected from small farms and from the wild. The products include candy, pickles, pulses, ghee, herbal teas, jellies and jams. Authenticity and reasonable prices are guaranteed.

(Source: Printed pamphlet and Bharatendu Prakash)

ORGANIC INDIA PRIVATE LIMITED

Plot No. 266, Faizabad Road, Kamta, Post Chinhat, Lucknow-227105, Uttar Pradesh. Phone: 0522-2701579, 099562 96685 Fax: 0522-2701395, Email: info@organicindia.com, Web: www.organicindia.com

Office:22/196 Indira Nagar, Lucknow, Uttar Pradesh. Ph: 0522-2351846, Fax: 0522-2352832, Email: contact@organicindia.com, Web: www.organicindia.com

During the 1990s thousands of people from all over the world came to Lucknow to meet Sri H.W.L. Poonja, a spiritual leader. Many settled in Lucknow living and working independently. A few people, including Prashanti de Jaeger, an Ayurvedic Practitioner and Bharat Mitra (Yoav Lev) began a small business of developing Ayurvedic herbal formulations for the health and well being of the many people coming to Lucknow. In the year 2006 the company was renamed Organic India Private Limited.

They cultivate, collect, process, manufacture and market Certified Organic Tulsi Teas, Herbal Supplements, Psyllium, Castor Oil, Ayurvedic and Medicinal Herbs, and many other organic foods and organic spices.

Today, farmers are being trained by Organic India in sustainable, organic farming methods. It contracts nearly 10,000 farmers to grow organic produce on over 50,000 acres of their own land.

Organic India has been given exclusive rights to harvest crops from certified organic forests throughout the plains and mountains of central and northern India.

Organic India is well known for promoting organic foods and health products.

Tea: Tulsi Chai Masala, Tulsi Green Tea, The Original Tulsi Tea, Tulsi Ginger Tea.

Herbal Supplements: Developed by Dr. Narendra Singh.

Natural Solutions: To treat people for acute and chronic conditions.

Ayurvedic and Medicinal Herbs: Whole herb, tea cut and powdered form, including Tulsi, Triphala, Ashwagandha, Senna, Psyllium (Isabgol).

Organic Foods & Spices: Grains, cereals, pulses, spices, edible seeds, oilseeds and specialized products, including castor oil, chicory, ginger, coriander, vegetables and spices etc.

(Source: Brochure and Website)

GORAKHPUR ENVIRONMENTAL ACTION GROUP

P.O. # 60, Gorakhpur – 273 001, Uttar Pradesh. Phone: 0551 – 2339774, Fax: 0551 – 2344832, Cell: 09415211006, Email: geag@nde.vsnl.net.in, Website: www.geagindia.org

(Contact Person: Dr. Shiraz A. Wajih, 224, Purdilpur, M.G. College Road, Gorakhpur – 273 001, Uttar Pradesh)

Gorakhpur Environmental Action Group (GEAG) is a voluntary organization working in the field of environment and sustainable development since 1975. Realizing the negative environmental and social impact of modern conventional farming methods, GEAG has concentrated its efforts to develop, promote and popularize agricultural systems that are ecologically sound, economically viable and sustainable. These efforts led to the establishment of the Ecological Agriculture Centre (EAC) in 1990.

The main objectives of GEAC are:-

- To promote and popularize sustainable agriculture and to develop and promote agricultural methods, practices and techniques which are environmentally sound, low cost and rely mostly on locally available resources.
- To conduct research and studies on agricultural systems, various techniques and methods to assess their viability, feasibility and sustainability.
- To establish a documentation and dissemination centre for sustainable agriculture and rural development.

GEAG seeks to attain these objectives by:

- Field experimentation and demonstration (on-farm research). GEAG works hand-in-hand with several farmers in eastern U.P. Efforts to develop demonstration sites are in progress.
- Documenting experiences of farmers and networking of organizations and individuals in order to enable them to exchange experiences, queries and other information.
- Advocacy and campaigning for land related and gender issues like land rights, minimum wages, etc.
- Publishing its quarterly Hindi newsletter, Vasundhara and its ‘Dossier on Sustainable Agriculture.’
- Conducting training workshops/seminars/symposia to bring interested individuals and organizations on a common platform for collective action.

JANHIT FOUNDATION

D-80, Shastri Nagar, Meerut – 250 002, Uttar Pradesh. Phone: 0121 – 2763418/ 2769329, Email: janhit_foundation@rediffmail.com , Web: www.janhitfoundation.org

Janhit Foundation initiated its programme for the promotion of organic agriculture in the year 2002. Since then, the movement has touched 210 villages in Meerut and adjacent districts. The main objective of the movement is to save the farming community from the aftermath of the Green Revolution and make the farmers self-reliant so that they will eventually sustain the movement themselves. By combining various farming practices such as floriculture, horticulture, apiculture etc. together with the cultivation of traditional crops. Janhit encourages the farmers to have an integrated organic farming approach. This also helps to maintain the biodiversity in and around their fields.

Janhit Foundation’s field coordinators urge the farmers to bring their livestock, especially cow and ox, back to their homes and fields. This is because with the presence of the livestock the raw material for the preparation of organic manure and bio-pesticides is readily available from the farm and home itself.

Janhit Foundation is a member of the International Federation of Organic Agriculture Movements (IFOAM).

PEPUS

Paryavaran Nagar, Hawelia, Jhusi, Dist. Allahabad - 221 506, Uttar Pradesh.

Contact: Shri Hariram

BIO-VED RESEARCH SOCIETY

103/ 42, Motilal Nehru Road, Allahabad – 211 002, Uttar Pradesh

Contact: Dr. B.K. Dwivedi

ALLAHABAD AGRICULTURE INSTITUTE (Deemed University)

Nainital, District Allahabad, Uttar Pradesh.

JEEVAN VIDYA PRATISTHAN

Govindpur, Khari (Jhalu), District Bijnore - 246 728, Uttar Pradesh.

BANWASI SEWA ASHRAM

Gobindpur, Via Turra, District Sonbhadra, Uttar Pradesh

Contact: Dr. Ragini Prem

Prof. V.K. DUBEY

N.C.D.C., B-33/14-22, Koshlesh Nagar, Sundarpur, Varanasi - 221 005, Uttar Pradesh

PARIWAR SANSTHAN

Vill. Bihita, Via Bibi Nagar, Buland Shahar – 245 402, Uttar Pradesh.

Contact: Shri Bharat Bhushan Tyagi

RAGHVENDRA KR. SHRIVASTAVA

538/101, Ka, Ahibaranpur, Sitapur Road, P.O.: Nirala Nagar, Lucknow, Uttar Pradesh.

DR.V.N.TEWARI

117Q / 48, Sharda Nagar, Kanpur – 208 025, Uttar Pradesh.

Dr. RAN SINGH ARYA

Vill. Paladi, District Bagpat, Uttar Pradesh.

AJIT SINGH

288/101, Arya Nagar, Arya Nagar, Lucknow, Uttar Pradesh 226004. Cell: 09936197072

(Source: Communication with OIP)

DR. O. P. SHRIVASTAVA

Ex-Director (IAS, BHU), 539-A, Mumford Ganj, Allahabad 211002, Uttar Pradesh. Cell: 09415600841

Scientist

(Source: Bhartendu Prakash)

DR. NARENDRA SINGH

Krishi Vigyan Kendra, (DRI-Chitrakoot), Ganeewa, Dist: Chitrakoot, Uttar Pradesh. Cell: 09415176268

Scientist

(Source: Bhartendu Prakash)

ARUN KUMAR

Asha Sansthan Jhansi, 129/K Green Park Colony, Jhansi, Uttar Pradesh. Cell: 09838493883

Promoter

(Source: Bhartendu Prakash)

DR. KRISHNAGANDHI

Abhiruchi, 48-Chambers, Near Elite Crossing, Jhansi, Uttar Pradesh. Cell: 09415057538

Email: gandhikrishna2000@yahoo.co

Scientist, Organic promoter (Source: Bhartendu Prakash)

DR. SUNANDA KIRTANE

78, C. P. Mission Compound, Jhansi, Uttar Pradesh. Cell: 09415412618, Email: sunandaka@rediffmail.com

Scientist, promoter

(Source: Bharatendu Prakash)

ER. R.K.PANDEY

Multi Services, A-31, Station Road, Cantt., Kanpur – 208003, Uttar Pradesh. Cell: 09450158162

Promoter

Interested in organic food business.

(Source: Bhartendu Prakash)

VISHWAMBHAR N. DIXIT

Village: Terahi-Muafi, PO: Tindwari, Dist. Banda 210128, Uttar Pradesh.

Promoter

(Source: Bhartendu Prakash)

SHRI. PREM SINGH

Saubhagya Vastu Kendra, Opp. Krya Vikrya Kendra, Sardar Bazar, Goolar Naka,

Banda, Uttar Pradesh. Ph.: 05192 227368 / 272022, Cell: 09415143598

Organic farmer and organiser of organic sales and bazaars.

ORGANIC CERTIFICATION IN UP FOLLOWING THE PARTICIPATORY GUARANTEE SYSTEM (PGS)

Uttar Pradesh has 20 organic farmers registered through two farmers' local groups. KVK coordinates this process for OFAI PGS Organic Facilitation Council.

Details of these local groups and their organic produce is posted at the www.pgsorganic.in

Bihar

CHAKRIYA VIKAS FOUNDATION

AT & PO Barwadih, Palamau-822111, Bihar. Ph.: 06562-88208

Chakriya Vikas Foundation (Foundation for Cyclic Development) works in the field of socio-economic transformation, based on sustainable agriculture practices, in about hundred villages on the watershed concept of resource management.

(Reference: World Wide Web)

SHYAM CHANDRA PRASAD

Village & Post Pathraura, Via Rajgir, District Nalenda – 803 116, Bihar.

(Source: Communication with OIP)

SHRI RAMESHWAR AGRAWAL

Old Gudari Road, Rajeshwari Bhawan, P.O. Ramna, District, Muzaffarpur - 842002

(Source: Bharatendu Prakash)

OFAI Bihar office:

Siddharth Jaiswal
Go Green Herbs Pvt. Ltd.
Jaico Pest Control
Behind Punjab & Sind Bank,
Fraser Road, Patna - 800 001.
Ph- +91 612 2221733 / 6529013.

Chhatisgarh

RUPANTAR

A-26, Surya Apartments, Katora Talab, Raipur, Chattisgarh. Ph: 0771 2422875. Email: binayak@senonline.com, sbinayak@gmail.com

Ccontact persons: Dr. Binayak Sen and Dr. Ilina Sen

Rupantar began around 1992 with small developmental and awareness raising activities.

In the early years, most of the activities were carried out on a voluntary basis. With the gradual realisation of the scope for fundamental work in the social sector, the range and depth of work expanded. All its work is with communities of people who have been marginalised in the process of development.

Since 1994, Rupantar has been working to develop modules of chemical free organic agriculture and has diversified into areas of watershed management, medicinal plant cultivation and sustainable agricultural practices.

Founded by Dr. Ilina Sen and Dr. Binayak Sen, Rupantar with sister health and human rights groups across the country have worked consistently for the past two decades to highlight the connection between health and human rights and alleviate the plight of marginalised people through grass root interventions.

Dr. Binayak Sen was imprisoned in May 2007 on charges of involvement with naxalites. The charge was strongly condemned by respected citizens across the country and by international bodies. He was awarded the 2008 Dr. Jonathan Mann award for Global Health and Human Rights. Government of India refused him permission to travel overseas to accept the award. His daughters and IIina Sen received it on his behalf.

Dr Vinayak Sen, a member of the organic farming community, on his release after two years of illegal detention by the Chhatisgarh government

In her acceptance speech during the award ceremony, Ilina Sen said: 'This is the first time that this award has been given to a south Asian – a region that is home to more than a quarter of humankind, and to some of the world's poorest communities.

'In India, nutrition surveys of the National Nutrition Monitoring Bureau have shown that over 33 % of the population has a Body Mass Index (BMI) of less than 18.5, considered to be the minimum level for less than starvation standards. Translated to demography, this means that over 400 million people are exposed to near starvation conditions.

'To add to this catastrophic situation, we are confronted now with a new set of crises. Between 1990 and 2005, the daily per capita availability of foodgrains has fallen from 510 grams to 438. World food prices have risen, and the concentration of land ownership in a few hands has intensified. These poverty stricken communities are not mere statistical data sets for us.

'For the last quarter of a century, it has been our privilege to work with, and share the lives of many such communities in a part of Central India called Chhattisgarh. Our experience with these communities tells us that in the kind of situation we have been describing, it is the communities' access to common property resources - grazing lands, water, forest resources, biodiversity- that mitigate to some extent the baleful effects of an alienated economy.

"Unfortunately in the recent past, the pressures of "development" have seen to it that these resources have become increasingly sequestered in private and corporate hands.

'...Rupantar and other groups have attempted to uphold a more convivial model of development, but in the face of contradictory tendencies that are much larger, it becomes very hard to preserve even small islands of common good.'

Dr. Binayak Sen was finally released from prison in May 2009.

(Reference: www.unifem.org.in and www.globalhealth.org, CMC NEWSLINE, June 9,2008)

THE CHHATTISGARH SEED SATYAGRAH (CSS)

Akshay Sail, Chief Coordinator, Chhattisgarh Labour Institute, c/o N-7, Anupam Nagar, Raipur - 492007 (Chhattisgarh). Email: award2006@rediffmail.com

The Chhattisgarh Seed Satyagrah (CSS) is a struggle by the farmers of Chhattisgarh to assert their rights over 22,972 varieties of paddy which were evolved through generations of selected farming by their forefathers. These seeds are now with the Indira Gandhi Krishi Vishwa Vidyalay based at Raipur. The movement has seen the coming together of several grass root organisations, activists, NGOs, women's groups, farmers, children and the general public.

It started in 2002, with an intensity that stopped Syngenta, the Swiss multinational corporation from signing a memorandum with IGKV to take over all the paddy varieties in the custody of the university for so called 'research'. Not trusting the government, the university, nor the intentions of Syngenta and other MNCs to not initiate the process again, CSS has now moved to demanding the seeds back for regenerating the indigenous variety of germplasm, for keeping the seed sovereignty with the people and for sustainable agriculture.

Their questions are simple: 'Why do 7-10 lakh farmers migrate each year outside the state and why do farmers' suicides continue? This, in spite of Chhattisgarh (at one time known as the rice bowl of India),presently producing over 60 lakh tones of paddy each year!' They demand farmer friendly polices be put in place by national and state governments.

The story goes back to Dr. R. H. Richharia who in 1971 won over the confidence of the farmers of Chhattisgarh and embarked on what came to be called "adaptive rice research" to evaluate and document all local rice varieties. This led to the collection of close to 23,000 rice varieties of which 19,000 are local to Chhattisgarh. The varieties included those with varying harvesting periods from 60-150 days; varieties with marked qualitative distinctions like largest (dokra-dokri), the longest and shortest and those that grow submerged under 3 metres of water (Naatrgoidi), many with high protein content, medicinal properties, scented varieties etc. The implicit agreement was that the farmer would hand over the varieties and their traditional cultivation knowledge to Dr. Richharia who would, with the consent of the farmers improve upon them to better suit local prevailing conditions and return them back to the farmers.

Sadly this project did not go beyond the collection phase. Dr. Richharia was sacked under World Bank pressure and today is no more. But this collection remains with IGKV. It is no longer cultivated and some (or most) of it may not be productive any more. The farmers demand that these be returned to them for gene pool comparison, so that they may continue keeping these varieties alive through on farming conservation methods rather than be left as dormant gene banks. Akshay Sail of Chhattisgarh Labour Institute, a prominent leader of the movement along with Jacob Nellithanam of the Richharia Campaign have been at the forefront of the struggle.

(Source: Communication with OIP and www.flonnet.com)

MAHANADI HORTICULTURE AUTONOMOUS CO-OPERATIVE SOCIETY LTD.

Regd. Off: Sanchit Krushi Farm, Kurud Tehsil, Dhamtari Zilla, Chattisgarh. Ph: 07705 223016

Mahanadi Horticulture Autonomous Co-op Ltd (MHA) was formed in order to ensure that farmers get better prices for their products.

MHA organises meetings, seminars, workshops, field visits, farmers' conferences etc. It runs agro service centers from where expensive machinery can be hired at reasonable rates and also shops for displaying and selling fertilisers, seeds etc. Members who have gaushalas are encouraged to collect cow urine and set up gobar gas plants. It provides the know how on mushroom farming, bee keeping, vermicomposting etc.

MHA plans to start collective farming by setting up fruit parks and herbal gardens.

(Source: World Wide Web)

JACOB NELLITHANAM

Richharia Campaign, B-3, Parijat Colony, Nehru. Nagar, Bilaspur 495001. jack_nel@rediffmail .com.

Central India

Jharkhand

BADLAO FOUNDATION

At. Mihijam, Post Mihijam, Jamtara – 815 354, Jharkhand. Ph: 0091-06433-228592 , Fax : 0091-06433-228592, Email - badlaofoundation@rediffmail.com

Santhal Parganas, now Jamtara is a composite landmass where natural resources have been under gross neglect by both the state and local community. Large tracts of land are lying waste due to improper practices and despite heavy rainfall, drought continues. This has lead to gross deficit of food and fodder. Badlao Foundation has intervened to successfully regenerate resources, through community agriculture to produce adequate food. Some of its endeavors have resulted in trend setting and rather eye-catching results in remote areas of its operation.

Badlao Foundation's farmers' training include vegetable cultivation, techniques of sustainable agriculture, compost making, vermicomposting, natural resource management, repairing of wells, renovation of ponds, land management, rainwater harvesting, rejuvenation of irrigation sources etc.

(Source: Website)

VIKAS MAITRI

P.O. Box 182, P.N. Bose Compound, Purulia Road, Ranchi – 834 001, Jharkhand. Ph: 2311749/ 2200527, Email: rch_vimaitri@sancharnet.in, Website: www.vikasmaitri.org

(Contact: Dominic Bara)

Vikas Maitri's work concerns integrated development of the adivasi groups in Jharkhand. They have an organic farm that plays host to several training programmes in skill development, entrepreneurship and organic farming techniques.

Their main focus is the revival of the Kalamdani variety of indigenous rice. Farmers have committed to growing the rice variety on 500 acres in 2008 as compared to 100 acres in 2007. Going by these figures, reestablishment of the variety looks very promising.

Kalamdani Rice is a traditional variety of rice known for its nutritious value and taste. Traditionally it was so famous that it found a place in the cultural songs of Jharkhand. It was phased out almost completely with the introduction of HVY strains in the 1970s and 1980s.

Bara has also supervised the establishment of organic farms in different localities for the purpose of experimentation and demonstration. He has published articles on sustainable agriculture and a popular booklet titled, *Compost Making*.

(Source: Website)

Member of Society for Rural Industrialisation with organic farmer.

SOCIETY FOR RURAL INDUSTRIALISATION

P.O Bairatu, Ranchi – 834 009,Jharkhand. Phone: 0651-313668

Society for Rural Industrialisation (SRI) has a project called ASVIN programme which aims to develop suitable land use and production systems for small farmers, particularly tribals, so as to evolve a replicable system of ecological agriculture. Starting from sheer barren land SRI now has developed the infrastructure to start production in an integrated and sustainable way. It has set up its ecological agriculture farm at Boreya, Ranchi with the assistance of Ms. Fabienne Tingry a volunteer who is involved in activities like education and research in the field of ecological agriculture.

(Source: Communication with OIP)

SHRI PRANAB CHOWDHARY,

Shramjivi Unnayan, Village and P.O. Gober Ghusi (Via-Patmada),Dist. East Singhbhum-832105,Jharkhand

(Source : Bharathendu Prakash)

LOK JAGRITI KENDRA,

52 Bigha, Madhupur,Dist. Deoghar-815353,Jharkhand

(Source: Bharathendu Prakash)

Central India

Madhya Pradesh

Interview: T G K Menon

46, Samvad Nagar, Navlakha, Indore - 452 001, Madhya Pradesh. Ph.: 0731 2403013

Menon is a recipient of several awards including the Padmashri and the Lal Bahadur Shastri award for outstanding farmer. He is presently the Chairman of the All India Biodynamic and Organic Farming Association; Secretary, Organic Farming, All India Krishi Goseva Sangh; an advisor to the Govt. of Madhya Pradesh on National Watershed Development Programmes for Rain-fed Areas; and a special invitee to the Ministry of Agriculture's Empowered Technical Committee for Promotion of Organic Farming.

He has written 6 books and regularly publishes articles in journals and newspapers. He travels across many districts in Madhya Pradesh to train, enthuse and encourage people to undertake organic farming, horticulture, agro-forestry and rain water conservation.

On his behest, the Government of India constituted a National Task Force on Organic Farming.

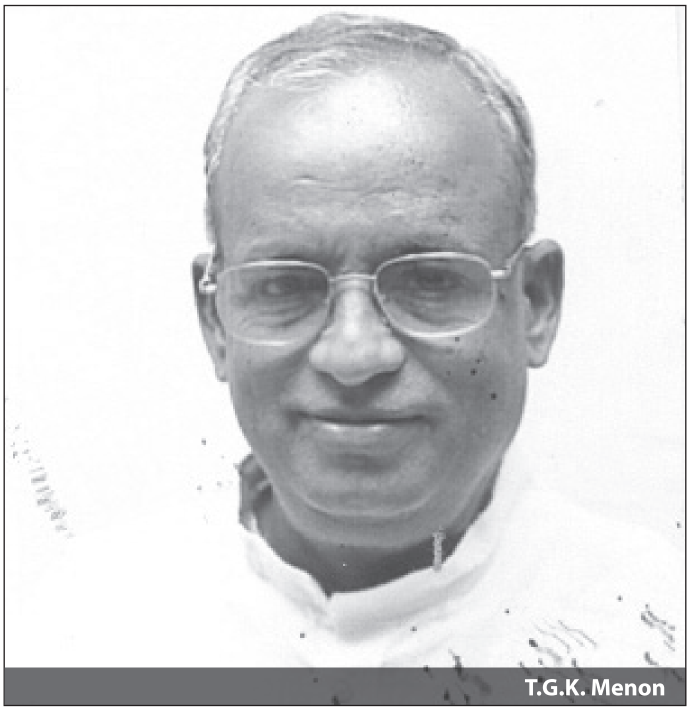
CA: We understand you are kept busy always...

TGK: Yes, after retirement from the Kasturba Trust in 1993, I am spending my time for the development of organic farming in the state and outside. Biodynamic agriculture is spreading all over the country. Without the adoption of proper soil and water conservation technologies, and production of quality compost by each and every farmer at his own farm, there cannot be successful organic farming in the state or country. So I am busy with these programmes, organizing training, laying out demonstrations in the farms, helping the Government and NGOs in organising farmers' fairs and jaivik haats, publishing popular articles in journals and newspapers, giving radio talks and telecasts of my experiments through cable producers and Doordarshan, etc. I do some experiments on my 2000 sq. ft. plot and learn new techniques.

CA: Would you give us an impressionistic view of the state of organic farming in the state of Madhya Pradesh?

TGK: The Government of Madhya Pradesh decided to take up organic farming on a large scale in 1999-2000. In 1998-99 itself, government-run farms had taken up 50% of their area under organic farming to demonstrate and study the production, productivity and economics of this method of farming. In 2001-02, the Government decided to take one village each in all 313 blocks as a bio-village or jaivik gaon to demonstrate and train others. Due to the successful program, in 2003-04 the State took a decision to spread this concept in five villages each in all 313 blocks, i.e., 1565 villages in all.

The State Government conducted national, state and district level seminars, workshops and jaivik haats for sharing of experiences of farmers and external workers. It also organised padayatras to disseminate the information, technologies, economics and other merits of organic farming in different districts. It awarded enterprising farmers and extension workers. Subsidies were given to organic farmers for making NADEP compost, vermicompost, phosphate compost, biogas slurry use, green manure, blue green algae and azolla. The farmers were encouraged to use liquid manure from the locally available green biomass and also biodynamic preparations.


T.G.K. Menon

Two jaivik haats in 2003 and 2004 were organised in collaboration with NGOs in which there were more than 100 stalls displaying various organic products, technologies and live-models and video films, etc. Policy makers and leaders from Uttaranchal, Uttar Pradesh, Karnataka, Maharashtra, Gujarat, Bihar, Punjab, Haryana and Rajasthan visited these haats in different districts. After these visits, these states have also taken up these activities and models in their states. The Organic Farming Task Force, constituted by the Government of India, has recommended in its report to take up Madhya Pradesh model of organic farming in all states. There is general awareness amongst the farmers of M. P. and they now know that organic farming is profitable and sustainable.

CA: How well do you think the concept of organic farming villages has been received?

TGK: The concept has been well accepted in many villages where the productivity has gone down by chemical and mechanical farming. Most of the farmers in tribal and backward regions have found organic farming sustainable and affordable and that they get more employment by making agriculture inputs in their own farms or villages, thus reducing migrations outside. In a couple of villages even the existing fertilizer shops had to be closed down as there were no buyers. There was a time when farmers looked suspiciously at suggestions that they adopt organic farming in their fields, but now after having seen many successful demonstrations and experiences in their neighbourhood, it is picking up steadily. However, more training and monitoring of farmers and extension workers are needed to further the expansion of organic farming in the state.

CA: Is the commitment of the Madhya Pradesh government to organic farming continuing?

TGK: There is full fledged commitment from the Government of Madhya Pradesh to organic farming. However, whenever there is a change in government, ministers, bureaucrats and departmental heads in the state, there is a slackness amongst the staff of the agricultural department. They become lethargic and slow in action and await new directions. The change of the chief minister (Digvijay Singh) in 2003, consecutive changes of Agriculture Production Commissioner, and Secretary and the retirement of Dr. G. S. Kaushal as Director of Agriculture on 31st July, 2004 have affected the programme. There is a slackening on promotion of organic farming in the State. As a matter of fact the scientific community discourages the farmers, extension workers and bureaucrats from taking up large scale organic farming.

CA: Do you think that organic farming can become the official policy of the Madhya Pradesh Government and displace chemicals completely within a set time period?

TGK: We have a democratic system of government and therefore we cannot expect 100% organic farming in any state of the country. However, majority of the farms and farmers can become organic farmers in a fixed period of time. I hope the Government of Madhya Pradesh will declare a policy of organic farming in a couple of years' time. In fact, we have 5-6 districts where the consumption of chemical inputs is less than 5 kgs per hectare and these districts will be declared as organic farming districts soon. Most of the tribal blocks are using very little fertilizers and chemical pesticides and they cannot afford mechanical farming too. The new Government has come out with cow based agriculture and integrated rural development with a scheme of Gokul Gram. In these villages – about 15 to 16 villages in each district – organic farming is being promoted.

I strongly feel that within 15-20 years, say by 2020 or 2025, more than 75% of the area can be brought under organic farming in the state, provided the Government machinery sincerely takes up this programme with dedication. The agriculture and animal husbandry scientists have to prepare a package of practices. Bullock-driven implements, power generating mini-village-level units, bullock-driven chaff cutters, flour mills, and biogas based power generation at village levels have to be demonstrated and propagated. We had shown these demonstrations in the jaivik haats, etc. A basic change in agricultural education is a need of the hour. Resurgence of our traditional farming technologies has to be scientifically proved and successfully introduced in the agriculture colleges and university to help the Government in drawing out the State level agricultural policy. Government has to provide subsidies for energy production with bullocks in villages for energy independence, and sustainability.

CA: In your opinion who are the best organic farmers in Madhya Pradesh?

TGK: I do not have a list of such farmers in the State. However, I can give you a few contact farmers or resources persons on organic farming:

1. Shri Indrabahadur Singh, Sagar
2. Shri Shyamsundar Chandok, Chhindwara
3. Shri Ravi Kelkar, Shajpur (working in the district)
4. Shri Prakash Maltare, Khargone
5. M/s Pratibha Syntex have taken up organic farming in 19,600 acres by about 4,000 farmers in Khargone, Khandwa and Dhar districts.
6. Dr. G. S. Kaushal, Bhopal
7. Shri Suresh Diwan, Hoshangabad
8. Shri Kumar Yavatikar Tiwari, Sanavad
9. Shri Sanmati Mandloi Maheshwar
10. Shri Govindbhai P. Tiwari, Barwaha
11. Smt. Uttara bai, Katni
12. Shri Maheshbhai, Behtakhedi, Sehore
13. Shri Ravi Thakur, Indore
14. Shri K. N. Kharnal, Indore
15. Shri Mahendra Kumar Bam, Barnagar
16. 50 farmers in Bagdipura village in Dhar district
17. 50 farmers in Rajpur in Dhar district
18. 45 farmers in Malgaon in Khandwa district
19. Shri Rajesh Jain, Badnavar
20. Smt. Nalini Madhav, Bairagarh, Bhopal
21. Shri. Amritlal Patwa, Kukleshwar, Neemach
22. Shri Rajeev Baruah, 14, Singnal Vihar, Mhow
23. Shri Bharat Pathak, Chitrakut
24. Shri Vinayak Parihar, Narsinghpur
25. Dr. Shankarlal Patidar, Bhopal
26. Kum. Preeti Porwal, Bhopal
27. Dr. Sadhuram Sharma, Indore
28. Shri Arun Dike, Indore
29. Shri Dayaram Dhakad, Ujjain

This list is incomplete. I do not think we have any kind of list of organic farming in M. P.

CA: What are the problems facing movements towards organic farming in M. P. ?

TGK: One, non-cooperation and discouragement by agricultural scientists.

Two, package of practices with organic farming technologies is missing.

Three, due to lack of knowledge, experience, education, and sustained directions from the headquarters to the extension workers, there is no confidence in extension workers.

Four, there are no facilities for continuous training of agricultural extension workers and farmers at block and panchayat level.

Five, no systematic monitoring of the programme in the State.

Six, audio-visual aids are missing.

Seven, mass media is not taking up organic farming or pollution-free food production as an issue.

Eight, big companies and MNCs can afford publicity and advertising. This is not so with organic producers.

Nine, we have ample agro-wastes and biomass in the state for recycling. We have minerals too, like rock phosphate. But proper training in compost making of different types is absolutely necessary. Most of the extension workers and officers cannot make NADEP compost tanks or good vermicompost tanks or biodynamic applications. They also lack enthusiasm and encouragement due to some reasons known only to them.

Ten, a definite organic farming policy for 5, 10, 15 and 20 years has to be planned and executed with a spirit of mission and vision.

Eleven, there is no certification system for organic products and inputs. A local agency has to be promoted by the State Government or State Agricultural University or Local Self-Government. Group certification or Internal Control Systems have to be adopted for domestic marketing.

Twelve, there is no proper guideline for value addition by agriculture and horticulture producers. The farmers and farm-women will get employment as well as better income, if the Government or NGOs introduce value addition, grading and packaging at block-level or district levels.

There is conducive atmosphere and environment in the State of Madhya Pradesh for promoting organic temper. Bureaucratic decisions have to be taken for a better tomorrow – for holistic living and healthy citizens with moral values and character. Rain fed agriculture and animal husbandry practices with proper rainwater harvesting, soil and moisture conservation must be promoted.

Organic Farms

RAJU AND SHALINI TITUS

Rishi Farm, Titus Farm House, Bhopal Road, Hoshangabad – 460 001, Madhya Pradesh. Cell: 9179738049. Ph: 0757 4280084 email: rajuktitus@gmail.com

The Titus farm is situated on the outskirts of Hoshangabad, just a kilometre and half from the city, on the Bhopal highway. Raju, Shalini and family live in a small house, surrounded by the farm. Once a government servant, Raju decided to follow his heart's desire to adopt a natural lifestyle which brought them to this idyllic place. Their experiment of organic farming which they have termed 'Rishi farming' goes much beyond the idea of merely tilling the land with ecological considerations. Rishi farming is a way of life that involves an enduring commitment of the entire family to nature and an increasing dependence on the forces of nature.

The land which was once considered to be barren and useless is now totally transformed in accordance with the hallowed principles of organic farming. There are a variety of trees whose branches are packed with birds of every colour and a rich and varied insect life. Initially the 12 acre farm could barely provide a few kilos of food grains. To their good fortune, around that time the prophet of organic farming, Masanobu Fukuoka, was visiting India. He stayed with Raju's family on his Rishi farm. This meeting proved to be fortuitous, for Fukuoka taught Raju some of the secrets of organic farming.

Raju and Shalini Titus practise go-nothing farming

The weeds on the farm posed a real problem to begin with. Fukuoka advised Raju to use this growth to the advantage of his farm as weeds contain vital organic wastes like plants, grasses, leaves, dead wood, insects, earthworms and various kinds of biological waste. Although dubbed as 'garbage', this is nothing short of tonic for the land. To destroy this is like destroying the life support system of any land. Fukuoka's genius lay in recognising this.

Raju's success lay in following this advice faithfully. Raju did not cut this 'parasite'. Instead they crushed this growth with their feet and spread it across the field. This proved to be good manure for the land. The crop which has derived its nourishment from the 'biological garbage' speaks for itself and underlines the efficacy of this parasite.

Sowing of the seeds on the farm takes place on unconventional lines. Unlike the majority of farmers, Raju does not follow a seasonal ritual of sowing. His sowing for the Kharif seasons begins much earlier when he covers his seeds with mud. These mud balls are then spread on the field, covered by dry grass and sticks. Great care is taken while these seeds are covered to ensure that some amount of sunlight and air reaches them. As the rainy season breaks, these seeds germinate and sprout on the bed of biomass, so carefully arranged before. Sometimes, the seeds are just thrown as the first rain descends. More or less, the same technique precedes the Rabi crop but extra care is taken to ensure the adequacy of irrigation. If, for some reason, the sowing is delayed, then sowing of corn seeds as well as cereal seeds is done simultaneously by hand. The strength of this kind of farming lies in the biomass accumulated in the field over the years. In the initial stages however, this biomass was not enough; but over a period of time the quantity has increased substantially, enriching the land with manure and enhancing crop productivity.

Earthworms found in the soil are the true collaborators in his experiment of organic farming. They breed in the biomass produced on the farm and make the soil porous and soft. This increases the soil's capacity to absorb more water and contributes to its productivity. The usefulness of earthworms is being exploited by some who sell them for a lucrative price in the market. Raju abhors the idea of vermiculture devoid of supportive farming and based on purely profit motive. Similarly he does not subscribe to the idea of high breed variety of earthworms.

Raju and Shalini's success story is a hopeful sign for those for whom farming is a full-time profession.

(Source: Yogesh Diwan)

DEEPAK SUCHDE

Bajwada, Post Nemavar, Taluka Kathegaon, District Dewas - 455 339, Madhya Pradesh. Ph.:0214 3281527, Cell: 09329570960, Email: deepaksuchde@gmail.com, Web: www.natuecofarmingscience.com

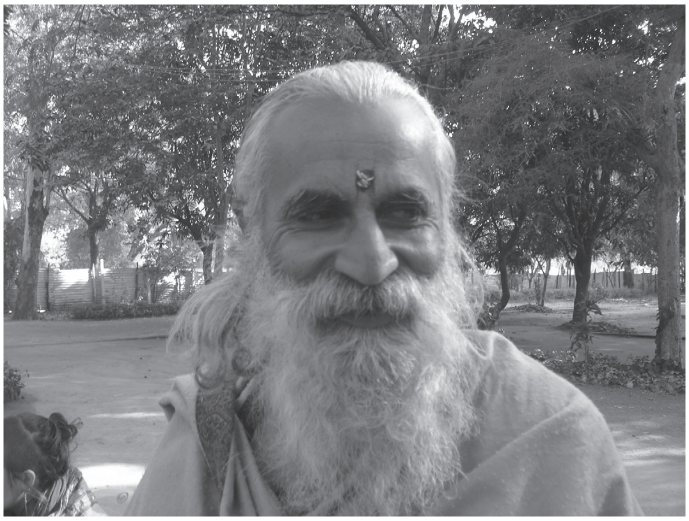
After establishing the marvel of 10 gunta (1/4th acre) farming in Panvel, Maharashtra, Deepak Suchde moved in 2006 to Madhya Pradesh. Having proved and established many theories and having perfected the technique of making the richest nutrient soils through his various experiments he wished for a small farm of his own. Not being a domicile of Maharashtra and not wanting to circumvent the laws of the land, he had to take a decision to move to Madhya Pradesh to realise his wish. It is indeed a matter of irony that a man who has contributed significantly to natural-ecological farming in the country had to move lock stock and barrel to farm a piece of land for himself.

Suchde has a 6 acre farm which he has purchased under the umbrella of Malpani Trust of Panvel, Maharashtra. On this farm is a 10 gunta plot that provides for a sustainable life.

The basic principle of Natueco (natural and ecosystem based) farming that Deepak Suchde is the proponent of is built on the premise that it is possible to create a micro climate within 10 guntas of land for farming which can meet a family's (of five members) entire requirement to live a comfortable life of self sufficiency. The only external input is the requirement of about 1000 litres of water per day which Suchde says is a basic human right anyway.

The secret behind this technology is that, through the principles of Natueco farming, maximum micro nutrients can be generated and made available from within the farm itself. There is no need for any external inputs except water.

Through the Ganga Maha Mandal, he is working closely on ways to provide succor to children who would otherwise be lost to malnutrition. A majority of these children belong to tribal belts where biomass is easily accessible and in plenty. Says Suchde, 'It is in this area, I have established the farm and proved that, just 1 gunta of land (1081 sq. ft) is sufficient to provide a family of five members with all its nutritional needs.' In the backdrop of deaths due to malnutrition, Suchde's experiments and technologies holds great hope for the rural poor of this country and the world who can avoid the death of their children by practicing Natueco farming.



Deepak Suchde is the natural inheritor of Prof. G.G. Dabholkar's methods of farming

According to Natueco farming principles almost any terrain can be farmed - roof tops, barren rock and derelict land. All one needs is, access to plenty of biomass, cow dung, cow urine and a small quantity of jaggery and water. Cowdung, cow urine and a small quantity of jaggery are fermented for three days to get what is known as amrut pani in Natueco farming. Then green and dry crushed biomass is pickled in the amrit pani for a couple of days. The drained mass now teaming and crawling with soil microbes is layered with a little earth and wood ash (from the domestic wood stove) and piled one foot high. In 45 days this turns into puffy, light, nutrient rich compost which is called 'masala mithi' in Natueco.

Generally, the productive root system of plants and trees is only 10 inches deep. The deep and wide, spread of the root system is mainly for anchorage. So technically, a foot deep of 'masala mithi' is very adequate to supply plants with all the nutrients they need. Suchde has proved that after the initial setting-up costs, a Natueco farmer needs no cash to buy anything from outside. All grains, vegetables, fruits, herbs, oilseeds and fuel wood for a family of five can be generated on farm. The surplus can be sold to generate a small cash income.

A typical 10 gunta plot has the following broad design. Tall trees are planted along the edge. A border of vetiver hedge prevents soil run off. One gunta each is assigned for a family homestead, a workshop and store, space for cattle and chicken, fruit trees, paddy and other grains, a nursery, water storage, cotton and fibre plants and fast growing fuel wood trees. Half a gunta each are reserved for spices and oilseeds. In about a year's time this model can stabilize to start providing for a five member family.

ICRISAT, Andhra Pradesh has tested samples of soils nurtured under Natueco farming placing on record that these soil samples are the best tested so far by them, for their rich microbial and farm nutrient value. The same reports have come for a farmer's field in Nasik, Maharshtra who has emulated the Natueco principles. A visitor to Deepak Suchde has succinctly observed that these principles are very relevant for solving the following three problems faced by the world today. 1. Increasing the input energy in farmlands and reducing the output in terms of energy losses. 2. Using this vital science to deal with health problems due to lack of food as a consequence of poverty. 3. Tackle the issue of decreasing organic carbon from the soil resulting in poor food and improving the water holding capacity of the land.

Deepak Suchde attributes all his contributions to the divine power and sincere work done by the late Prof. Shri S.A. Dabholkar and offers all his services as dakshina to his Guruji and to humanity.

He also offers short and long-term courses in Natueco Farming with apprentice facility. For details, contact him directly.

(Source: Communication with OIP, Web-resource)

SHYAM BAHADUR NAMRA

Ankur Farm, Post Jamudi, Anuppur, District Shahdol – 484 224, Madhya Pradesh.

Ankur farm is situated in an Adivasi bahul in Shahdol district of Madhya Pradesh, nine kms from the road that goes to Udgam Amarkantak from Anuppur railway junction. Its area is approximately five acres. It was established in 1977 by Shyam Bahadur Namra and Anuradha Singh with a view to teaching the adivasis conventional farming.

However, although the income was good in the beginning, later on, as expenses kept going up, profits kept decreasing. There were other problems as well. The efficacy of the pesticides used was diminishing and so more poisonous pesticides had to be used.

Till 1987 chemical fertilizers, pesticides and high yielding modern seeds were used. In the beginning there was good income, the locals were positively influenced, vegetable farming was undertaken on a large scale in around 100 villages and Anuppur became one big vegetable mandi. Chemical fertilizers had to be increased every year. The soil started becoming hard and coarse. The number of earthworms started diminishing and soon were as good as gone. The birds either stopped coming to the area or they started dying.

Then, in the first week of December 1984, the Bhopal gas tragedy happened. Sevin, manufactured by Union Carbide was the major pesticide being used by farmers. Anuradha and Namra decided to stop using pesticides but as a result, their entire crop was destroyed by pests. They then began to search for literature on organic farming and to take a closer look at some experiments on natural farming. They saw that farming could be done in an entirely natural way and decided to try it out on their farm.

In the first year, maize, barbati, brinjal, tomato and okra were sown. Brinjal was quite weak, so were the tomatoes. Then the maize and barbati was attacked by a pest called maho. The attack was so severe, they thought the crop would be ruined. However, one week later, big ants and flies invaded the field and put an end to the maho attack. The Namra family were finally convinced that nature has a way of dealing with problems and they decided once and for all that they would never again use chemicals or pesticides.

Since then there has been no ploughing. The practice of compost making has been stopped and wastes are spread directly in the fields. Seeds are germinated and sown after making a simple depression in the soil with a shovel. These practices have yielded the following benefits:

1. Earthworm population has increased. All kinds of birds are around all through the day eating insects and pests.

2. Although the yields are not yet equal to those from chemical farming, there is an increase in the yields every second year. The crops look so green and healthy that doubting villagers even accuse the Namras of using chemical pesticides on the sly. The yields are so tasty that demand for them in the market has increased. Fewer plants are affected by disease.

3. Lesser irrigation is needed. The water retaining capacity of the soil has increased. When the crops on other farms are destroyed by lack of or excessive rainfall, the Ankur farm experiences less damage.

4. Cracking and erosion of the soil has stopped. The porosity of the soil keeps increasing every year.

There are some problems which have to be tackled – one of which is that many new grasses have taken root which are difficult to remove and how to stop their growth is uncertain.

The Namras have noticed however that unlike the sweeping influence that the chemical farming methods used on this farm earlier, had on neighbouring farmers, this new way has not caught on. But farmers are beginning to think positively about it. Besides, since there have been no subsidies, etc. for this kind of farming, financial problems have to be faced. Also, there has been no campaign to popularise it. Due to local political conflicts, people are spreading wrong information and so many farmers are confused. However, as expenses for farmers using chemical fertilizers and pesticides are increasing and the number of new diseases and pests are also increasing, the farmers are forced to take a look at nature's way of farming.

(Reported by Lorry Benjamin)

FRIENDS RURAL CENTRE

Rasulia, Hoshangabad – 461 001, Madhya Pradesh.

The Friends Rural Centre is a 45 acre complex. In 1980, inspired by Fukuoka's book 'The One Straw Revolution,' Partap Aggarwal started an experiment in natural farming here. The Centre publishes the Hindi edition of Fukuoka's book.

G.V. PARANKAR

PO Rondha, Gram Swarajya Ashram, Village Karajagaon, Betul District – 460 002, Madhya Pradesh.

On his 15 acres farm, Patankar has set up a basic education school. He is a strong supporter of khadi and village industries. He has been an ardent advocate of organic farming all his life. He has never used chemicals on his own land. He is actively involved in the cow protection campaign initiated by Vinoba Bhave and has learned and practised various efficient compost making techniques.

(Source: Communication with CSE, 1993)

S.S. CHITWADGI

Bharat Forestry Consultancy, 156/A, Indrapuri, Bhopal – 462 021, Madhya Pradesh. Phone: 0755 2586586, Fax: 755 2786912, Email: mangeshi@sancharnet.in/ edss156@yahoo.com

Active promoter of organic farming. Conducts environmental awareness camps supported by Govt. departments.

Sambhavna's Organic Medicinal Herb Garden

c/o Sambhavna Clinic, 44, Sant Kanwar Ram Nagar, Berasia Road, Bhopal - 462018, Madhya Pradesh. Phone: 755-273-0914, Email: terrykisan@yahoo.com

Terry Allan left the US to come to Bhopal and help start and manage a medicinal herb garden for the victims of the Bhopal Gas Disaster. The farm, which is adjacent to the new Sambhavna Clinic, is purely organic. It is also, due to Terry Allan's pure devotion, a monumental success. – Claude Alvares

From the shade of the tamarind tree at the top of the garden you can look out over our garden fanning out below. A raging red amaranth welcomes you to the paths curving off to different corners. Your eye is drawn to the bright orange nasturtiums in the distance, beckoning you to the cool blue realm of oats in the back. There in the back are lush patches of clover, alfalfa, indigo, and flax with lovely sky blue flowers floating like stars among its mass of vertical stems. The smooth, broad, bright green blades of our young banana trees poke up out of this carpet, along with the less noticeable saplings of other medicinal trees and shrubs.

In the opposite corner is the lemongrass patch with bamboo, guggul, and putranjeva. Through the sunflowers you see the large patch of chandrashur turning golden as the seeds ripen. In other parts of the main growing area ashwaghanda, tulsi, plantago, nigella, coriander, dill and calendula are inter planted with alfalfa and fenugreek for nitrogen fixing, biomass and soil improvement. Unfortunately, our big plantings of tulsi never came up. But the small plantings of six different types of basil and tulsi are doing well. We are growing them for seed, so that next time we will get better results.

It's hard to remember that just back in October and November, gardeners Ratna Soni, Amar Singh, Sunil Lodi and I were making the beds for the first time. While the plants have been happily growing along with the weeds we have been busy making lots of compost, and spreading it around. It is beautiful, rich and earthy.

Mohan, the security guard who helps out in the garden in his spare time, went to the scrap market and found an old refrigerator body and wheels to make a wheelbarrow, which has become the favorite vehicle of the kids. We installed a basic irrigation system with a couple of taps and hoses that make it a lot easier to water the different parts of the garden. We planted cuttings around the fence lines that have grown quite well during this cool winter season. And we adopted a puppy, named 'Tiger' who is our mascot and always on the lookout for treats and biscuits.

We have been harvesting various things, and have recently finished cutting our biggest crop of chandrashur (Lepidium sativum), or garden cress. We are interested in the seeds, which are used in Ayurveda to treat joint pain, backache, leucorrhea, amoebic dysentery, and to increase flow of mother's milk. Because it increases heat, it should not be taken by pregnant women. L. sativum seeds are also very high in easily assimilated iron. The seeds, rinsed and briefly soaked in water, can be eaten to help overcome anemia, a common problem among gas-affected women.

And so it seems that we have become seed growers and savers! Not only are we saving seed for our next crops, but the seeds themselves are medicine. Other medicinal seeds we are growing include flax, tulsi, psyllium, fenugreek, and nigella. Threshing the seeds is best done by inviting a lot of kids over for a dance party. We all had so much fun jumping, tumbling and dancing on top of the dry plant material, that the seeds were separated with pure laughter. After threshing, Ratna, Kanta, and Puja are experts at winnowing away the chaff. Learning to winnow is also like dancing – with the basket, the seed, and the wind.

Several people have come to volunteer at the garden. They have helped with sowing seeds, weeding, and harvesting. We have been harvesting and drying lots of tulsi leaves, nirgundi leaves (Vitex negundo), calendula flowers, curly dock roots, and Mexican poppy roots. One of our big Arjun (Terminalia arjuna) trees died, so we harvested several kilos of the bark, which is used as an infusion to help treat heart disease.

We are also starting to get a lot of visitors. One day a group of gas-affected women from Oriya bustee came over for a tour and we all shared our knowledge about the medicinal plants growing in the garden. Once a month the clinic staff and interested community health volunteers come to the garden for a class led by Dr. Deshpande about the use of specific plants in Ayurveda. After the new clinic opens we will have many such tours and classes. Other visitors have included researchers, activists, journalists, and filmmakers from different parts of the world. Please write to us if you want to visit on your next trip to Bhopal.

(Source: Communication with OIP)

ARVIND SARDANA

Eklavya, 33 Saket Nagar, Dewas – 455 001, Madhya Pradesh. Phone: 07272 223496 Email: eklavyad@sancharnet.in

(Source: Communication with OIP)

CHITTAROOPA PALIT

Khedut Mazdoor Chetna Sangathan, 16 Mahatma Gandhi Marg, Alirajpur, District Jhabua – 457 887, Madhya Pradesh.

Chittaroopa has been working with the Narmada Bachao Andolan for nearly 20 years and is also actively involved in seed collection and networking.

(Source: Lorry Benjamin)

DAVID KADAM

Director, Swissaid-India

Networking and support to organic farmers and promoter groups. (Source: Lorry Benjamin)

JANAKLAL THAKUR

Chhattisgarh Mukti Morcha, Dilli Rajahara, Durg District, Madhya Pradesh.

Popularising organic farming.

(Source: Lorry Benjamin)

DR MOHANLAL CHORDIYA

Post Dileepnagar, Ratlam – 457 001, Madhya Pradesh.
Phone: 07412 30081

(Source: OIP Archives)

MAHAPRASAD BARKADE

Post Chada, Tehsil Dindori, District Mandla, Madhya Pradesh.

(Contact: Rajesh Malviya, Institute of Women, Child and Youth Development, Khamla, Nagpur – 400 025, Maharashtra.)

Works with organic farming and related issues covering at least 10 villages.

(Source: Lorry Benjamin)

NITI and RAKESH DIWAN

Kasera Mohalla, Hoshangabad – 461 001, Madhya Pradesh.

Cell: 09826066153 and 09424467604

Niti Diwan is involved with popularising organic farming and networking while Rakesh writes on organic agriculture and related issues for Dainik Bhaskar.

(Source: Bharatendu Prakash)

RAM KUMAR CHAUDARY

Gram Seva Samiti, Post Raisalpur, District Hoshangabad, Madhya Pradesh.

The Gram Seva Samiti along with Suresh Diwan are actively involved in educating farmers on organic farming methods, compost making etc. They conduct regular trainings and farmers' meetings.

(Source: Lorry Benjamin)

SHAILAJA KALLE

Shailaja Kalle is based in Chourai near Jabalpur but has set up an organic farm on one and half acre land along with Usha Rao in Machnoor, Andhra Pradesh. She works between Machnoor and Chourai. Apart from farming herself, she helps other organizations and individuals on issues related to organic farming.

(Sources: Lorry Benjamin and ARISE)

S.K. SINGH

Sambhav, 19, New Vivekanand Colony, Balwant Nagar, Gwalior – 474 002, Madhya Pradesh. Networking.

(Source: Lorry Benjamin)

BIORE ASSOCIATION

Mandleshwar Road
Tehsil: Kasravad, Dist. Khargone, MP
Contact: Rajeev Baruah
Ph: 07285-200014, 09826074664
(Source: Brochure)

SHASHI SAIL

Chhattisgarh Mahila Jagriti Sangathan, A-38 Housing Board Colony, Shankar Nagar, Raipur – 492 007, Madhya Pradesh.

Popularising organic farming and Chattisgarh campaign against Syngenta.

(Source: Lorry Benjamin)

ALL INDIA BIODYNAMIC AND ORGANIC FARMING ASSOCIATION

51 Swastik Nagar, M.O.G. Lines, Indore 452 009 Madhya Pradesh.

Contact Person: V.B. Karmarkar, 301, 'VINEET,' 16/3 Old Palasia, Indore 452 018, Madhya Pradesh.

The primary objective of the AIBOFA is to protect nature and the environment by promoting biodynamic and organic farming practices, thereby producing organic food for betterment of human health.

Its other objectives include promotion of research in connection with biodynamic and organic farming systems, publishing books and other mass media material, organizing training courses, demonstrations and field trials, providing professional advice to farmers, inspecting and certifying farms and organic and biodynamic products as per national and international standards.

At present the association is working with the government of Madhya Pradesh for promotion of organic agriculture in the state and in organizing trainings for farmers, and field officers of department of agriculture. So far more than 3000 farmers and workers have been trained. The association has published a practical guide on cow based agriculture in Hindi titled 'Goyme Vaste Lakshmi' meaning prosperity is in cow dung. 12000 copies have been sold to farmers and extension officers/workers in the government and NGOs. It costs only Rs.30.

AIBOFA also prepares annually the Biodynamic Agriculture Planting calendar which is very popular among the farmers throughout India.

Shri V.B. Karmarkar after serving the department of agriculture for more than 38 years, retired as Joint Director for Agriculture. The government of Madhya Pradesh created a special post of Deputy Director (Organic Faming) in the year 1994 and posted Shri. V.B. Karmarkar on this first ever official post for promotion of organic faming in the state of Madhya Pradesh. He is actively working for the cause of organic faming. He has expertise in soil and water management, watershed management and command area development. He has written many articles in regional agricultural magazines/weeklies and was founder editor of Ahimsak Kheti published from Indore.

(Source: Communication with OIP, leaflet)

Interview with Dr. G S Kaushal

75-A, Janki Nagar, Chunnabhatti, Kolar Road, Bhopal
– 462 016, Madhya Pradesh. Ph.: 0755 2428154, Cell:
09826057424, Email: dr.kaushalorg@rediffmail.com

Dr. G. S. Kaushal as Director, Agriculture, Govt. of Madhya Pradesh played a key role in putting the state on the path of organic farming. Today, even after retirement, the zeal and enthusiasm continues, with him being kept busy with farmer trainings and workshops.

Dr. Kaushal has been awarded the Dr. R.L.Richharia fellowship for a term of 5 years to popularise proper disposal of flowers offered at temples by converting it to organic manure. The Hindi book 'Shradh ke phoolon se sona' authored by him has been recently published by the Council of Science and Techonology, Bhopal, Madhya Pradesh.

OIP: Dr. Kaushal, what was the impetus for the state of Madhya Pradesh to take up organic farming as a state initiated manifesto?

Dr. G S Kaushal: Agro ecological health depends on good physical condition of soil, water retention and infiltration capacity, available biomass, presence of beneficial macro and micro-flora, rainfall pattern, quality of water and human interference. Environmental problems arise due to injudicious use of agro-chemicals, deforestation and maximum alteration from natural to artificial conditions. The creation of extreme artificial conditions may initially manifest in sudden benefits but leave behind an imbalanced environment, infertile and degraded soil, polluted abiotic and biotic environment, presence of chemical residues in soil, water, plants, domestic animals, human tissues and organs. Keeping in view the maintenance of ecological balance, and as a means to sustainable agriculture organic farming was introduced in the entire state.

OIP: Did this understanding emerge from any known history of organic practices in the state?

GSK: In Madhya Pradesh as early as 1930, Albert Howard developed the Indore method of compost making at the Plant Institute, Indore and popularised the system. The method still has relevance. Organic farming concept was seeded in Madhya Pradesh in the centenary year of Mahatma Gandhi in 1969, when the management of Kasturba Gandhi National Memorial Trust, Indore resolved to adopt organic farming and gradually transformed its entire 200 ha farm at Kasturba Gram into organic system.

During late seventies and early eighties seminars, workshops and farmers' fairs focusing on organic system of cultivation were organized in the state to create awareness among the farming community about the importance of organic system of cultivation for sustainable agriculture.

OIP: What was the role played by the Dept. of Agriculture in this process, and how did it go about it?

GSK: It was only during late nineties that the Department of Agriculture, Government of Madhya Pradesh resolved to adopt organic farming in an extensive way throughout the state. With this, started the trials and demonstration on farmers' fields and the programme of organic farming picked up real momentum.

Dr G.S. Kaushal is to be found often these days in the fields of organic farmers, providing them much needed technical help

In the initial year (1999-2000), various methods of organic farming were tried on government farms, with a view to test their efficiency in comparison to chemical farming. For the trials, fifty percent area of the fields on farms was put to organic system, while the rest fifty percent area was kept under chemical system. The trials included natural methods for pest control, green manure, use of farm yard manure, compost, Nadep compost, vermicompost, agnihotra, biodynamic preparation etc., while chemicals were used on the non organic part of the fields. The comparison of the two systems i.e. organic and chemical reflected significant benefits. After having achieved satisfactory results from these trials, the Department of Agriculture took the technique of organic farming to its farmers across the state through the setting up of Bio-villages, Jaivik Paatshaalas, Jaivik Haats, Special programme for women and a Biocentre.

OIP: Could you elaborate on each of these initiatives?

GSK: Take bio-villages:

In the year 2001-2002, the Department of Agriculture launched extension programmes on organic system by selecting one model bio-village in each block, thus selecting 313 bio-villages in the state. Organic manure production technologies like vermi compost, Nadep, biogas slurry, green manuring were popularised and farmers were trained in its making techniques and its application on their field crops.

In the year 2002, two more villages were identified as bio villages in each block. In this way, 939 villages in 313 blocks were covered under organic system in the state during 2002-2003. The program picked up very fast and a large amount of organic manure was produced in these villages. Green manuring was also adopted on a large scale. Farmers' started realising the economics and advantages of organic systems and adapted accordingly. The response from cultivators was so fabulous that the program was extended to 5 villages in each block covering 1565 villages during 2003-2004.

A national seminar on organic system was organized on 28-29th of May 2002 at Bhopal and was attended by a large number of practising cultivators from all over the state, thus adding energy and excitement to the movement. To popularise and disseminate the message of organic system among the large farming community in the interior villages, a journey on foot, 'Pedal Jaivik Pad Yatra'was undertaken from various districts of the state from September 4, 2002. The processions converged at Indore on Gandhi Jayanti with full enthusiasm and celebration.

The first ever Jaivik Haat was organized at Bhopal, from May, 30 to June1, 2003. Alongside was a seminar to highlight the importance of organic system for sustainability of production, better soil health and environment. Over 100 stalls exhibited organic products and demonstrated various techniques of organic input manufacture. It was interesting to note that, besides large number of cultivators, consumers from various parts of the state visited the haat and purchased organic vegetables, grains, pulses and jaggery. Interestingly, all produce was sold out and consumers never queried about certification nor questioned the costing. The organic cuisine at the eateries set up were a big hit.

The response to the first Jaivik Haat was so overwhelming that a second Jaivik Haat was organised during June 2004.

Bio-Centre:

A bio-centre was established at Government Agriculture Farm, Phanda in Bhopal District with 10 cows at the start. At present the bio-centre houses 150 cows brought from a Gosadan (shelter). The centre's activities demonstrate the following:

1. Dry and old cows can sustain themselves, if cowdung and cow urine is collected and used scientifically.
2. A 35 cubic meter gobar gas plant for energy and manure.
3. Nadep and vermicompost for converting all biodegradable farm waste into valuable organic manure.
4. The utility of various methods of organic system.
5. Production of vermi-wash to use as a growth hormone for crop plants.
6. Flowers from Bhopal city temple collected once a week and brought to Phanda farm to demonstrate the utility of offered flowers and its efficacy as organic manure.
7. Use of natural vegetation as bio-pesticide.
8. Impart practical training to cultivators every Wednesday on organic system.
9. The contribution of disabled and dry cows in organic system of cultivation.

Jaivik Pathshala:

Jaivik Patshalas are volunteer run and managed farmer night schools initiated by the dept. with experts, cultivators and extension workers meeting informally in the evening to discuss and exchange notes on issues of concern. These are very popular, as they provide on the spot help and suggestions. Technical experts update members regularly on latest technologies. Such pathshalas are running successfully in village Naigoan of Katni district and Malgoan of Khandwa district. These Jaivik pathshalas have proved very successful in disseminating knowledge on organic system of cultivation and encouraged large number of cultivators to adopt organic system.

Women in Organic Farming:

Madhya Pradesh Women in Agriculture (MAPWA) project was launched in eight districts in the first phase and extended to another six districts in its second phase. Women were given training in composting and pest management techniques, and helped to organise themselves for collective agricultural production. They produced not only sufficient quantity of organic manure for their own consumption but also earned additional income by selling earthworms, vermicompost and organic produce in the local market.

OIP: Has the produce moved out of the local market and what about certification that the market demands for organic produce? Has there been any thrust in that direction?

GSK: Certification by notified agency is a costly affair for the poor, small and marginal cultivators. Therefore a system of registration of organic fields and crop was developed at the initial stage. The village level Krishi Standing Committee was authorized to register a cultivator interested in taking up organic crop production. The charge was a nominal Rs.25 per cultivator. After successful organic production, farmers got a certificate to the effect that the crop in 'x' area has been grown without using chemical fertilisers and pesticides. This has worked satisfactorily at the local level.

During the year 2004-05 various APEDA approved agencies have certified large areas in Madhya Pradesh. In 2006 – 2007 Madhya Pradesh accounted for 1.6 lakh hectares of certified farms of the 5.67 lakh in the country. This rose to 2.14 lakh hectares of 8.25 lakh hectares for 2007-2008. However, there are large areas under organic system of cultivation in the state especially in districts of Mandla, Dindori, Shahdol, Sidhi where fertiliser consumption is less than 20 kg/ha. In these districts nearly 1.2 million ha. of cultivated area is such that fertilisers have never been used. This can be brought under certified organic system as done in China.

In China, in one year (2004-2005), nearly 5 million ha. of area where pesticides and fertilizers have never been used has been certified. For a similar thing to happen here, the Department of Agriculture and NGOs have to play a positive and active role.

OIP: What is the present status of organic practices in the state? Has the momentum kept pace with the constant change in governments and ideologies?

GSK: The pace of organic system of cultivation has slowed down during the last two years.

The present Chief Minister, talking to *Hindustan Times* correspondent in Dec. 2005 explained 'my endeavor would be to see Madhya Pradesh as no. 1 in the world on the bio farming map.' Contrary to Chief Minister's statement, the present Agriculture Secretary on 31/12/2006 was of the opinion that dependence on chemical farming would continue for the next 25 years.

Due to lack of understanding at the highest level in the Government, organic system of cultivation is left to the cultivators and organizations that believe in this system. During rabi 2006-07 there was huge demand of urea and large scale shortages were observed everywhere. As far as I know for the first time in history, there was an incidence of firing on cultivators demanding urea in Sabalgarh tehsil of Morena district in Madhya Pradesh. This adverse condition could have been avoided if the State had continued to follow and keep up the tempo of promotion and emphasis on organic.

However, the present government during the Assembly election, 2008 included the following points on organic system of cultivation in their manifesto:

1. Madhya Pradesh state will be developed as first and model organic state.

2. In the state first organic Agriculture University will be established.

3. At village level self help groups will be encouraged to prepare organic manure.

4. Vermicompost and biogas units will get special subsidy.

5. To encourage production of organic produce, the arrangement for registration & certification will be made at district level.

6. Efforts will be made for easy marketing of organic produce.

7. Special subsidy will be provided for organic produce.

8. For analysis of organic produce quality, central laboratories will be establised at district level.

9. Farmers will be encouraged to take up agro forestry in organic farming.

10. To encourage organic farming, farmers will be motivated to use soil from Panchayat tanks for their fields.

11. Implements like rotarafor, zero village seed drill used for making organic manure will be provided on subsidy.

12. Young village youth will be encouraged to take up preparation bio pesticide from locally available vegetation like neem. In this respect, village level industries will be developed.

13. In urban areas, entrepreneurs will be encouraged to take up compost making from degradable waste (biomass).

The action on the above has been initiated through various agencies including Govt. in the state.

OIP: What prospects do you personally see for the future?

GSK: The low consumption of chemical fertilisers and pesticides has remained the weakness of the state. The fertiliser consumption in the state during 2005-06 was about 53kg/ha as compared to all India average of more than 100k/ha. even districts like Mandla, Dindori, Sidhi, Umaria, Ashoknagar and Panna have a consumption of 14.58, 3.14, 17.34,5.08,9.93 and 16.90 kg/ha respectively. With this consumption trend of chemical fertiliser it would be a rather difficult task for the state to catch up with the national average to contribute towards chemical farming. Similarly, consumption of pesticides is very low i.e. 170 gm/ha/year as compared to 440 gm/ha/year of all India average and 10-12 kg/ha/year in Japan. The states with low consumption of chemicals like Uttaranchal & Sikkim have already been declared as organic states and are taking advantage of the growing national and international market for organic products. Following the path of organic system of cultivation, Madhya Pradesh can convert its weakness of low chemical fertiliser and pesticide consumption into its strength. Large numbers of cotton exporters are coming to Madhya Pradesh for organic cotton. Similarly other groups are encouraging production of organic grains/pulses/vegetables etc. and its marketing in the country as well as in the international market.

Simply by organising organic system of cultivation in large areas, supporting and making arrangement for certification in the traditional areas of Mandla, Dindori, Sidhi, Umaria, Ashoknagar and various other parts of the state large scale production of organic product can be obtained for national and international market.

And, if nothing else, cultivators can save a lot of input cost. There is opportunity and great potential for a state like Madhya Pradesh to harvest the benefit of the organic trend and as bonus we would be contributing positively to pressing environmental concerns, consuming poison free food and adding personal prosperity to the cultivators of the state.

BIOFARMING VILLAGES of MADHYA PRADESH

Data on various composting techniques relevant to the states' 12 agro geographic regions, the field area covered and contact addresses are available for viewing on www.mp.gov.in/biofarming

(Source: World Wide Web)

SARVAMANGALAM NATURAL PRODUCTS PVT. LTD

Bhatowli Village, Near Kalidham, Gwarighat, P.O. Jabalpur - 482 002, Madhya Pradesh. Ph: 0761-2419320(O), 4917371 (R), Fax: 0761-2665562, Cell: 0930017226, Email: padmini.shivkumar@gmail.com, Web: www.indiamart.com/sarvamangalamnaturalproducts

Regd Office: Tolichowki, Hyderabad, Andhra Pradesh.

All Types of Organic & Herbal Products, Plant Promoters & Herbal Pesticide, Sericulture – Producer

Contact: Dr. (Mrs.) Padmini Shivkumar, Director

(Source: Brochure)

MAIKAAL bioRe (India) LTD

14, Signal Vihar, Mhow – 453442, Madhya Pradesh.
Ph.: 07324-274664/272714, Field Office: 07285-232284/231935, Email: mbil@sancharnet.in

Contact: Rajeev Baruah, Managing Director

(Source: Brochure)

DR. AMIT KUMAR JHA

Jawaharlal Nehru Krishi Vishwavidyalaya (JNKVV), Adhar Tal, Jabalpur, Madhya Pradesh. Cell: 09425469854, Email: amitagcrewa@rediffmail.com

Scientist.

(Source:Bhartendu Prakash)

ASHISH MOHAN SHARMA

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Organic farming promoter.

(Source: Bhartendu Prakash)

AJEET SINGH

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Organic farming promoter.
(Source: Bhartendu Prakash)

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Scientist
(Source:Bhartendu Prakash)

GAURAV KHARE

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gauravkhare3@gmail.com
Promoter
(Source:Bhartendu Prakash)

MILIND KHANVILKAR

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Promoter
(Source:Bhartendu Prakash)

SAHJEEVAN

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Contact: Dr. Girdhar Mathankar

DR. NARENDRA N. MEHROTRA

Executive Director, M.P.C.S.T., Vigyan Bhawan, Nehru Nagar, Bhopal – 462003, Madhya Pradesh. Cell: 09329564569, Email: nnmehrotra@gmail.com
Scientist
(Source:Bhartendu Prakash)

MS. VANDANA SHARMA

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Scientist
(Source:Bhartendu Prakash)

DR. ANAND RAI

Development Alternatives, Taragram, Orchha, Dist. Tikamgarh, Madhya Pradesh. Cell: 09415113965, Email: Anandk.rai@gmail.com
Promoter
(Source:Bharatendu Prakash)

MADHAVASHREM SANSTHAN

Sehore Road, Bairagarh, Bhopal, Madhya Pradesh.

GANDHI SMARAK NIDHI

Gandhi Bhawan, Chhatrasal Crossing, Chhatarpur – 471001, Madhya Pradesh.

The Organic Village of Malgaon in Khandwa

Malgaon village, to know it better, is about 13 km from Khandwa Dist. HQ situated in Chhaigaon Makhan block. It has a population of slightly over 3,000 with 365 farmer households. At the commencement of organic farming (2001-02) this village had 245 wells, 42 tubewells , 65 bio-gas plants, 7 NADEP tanks and 2 vermiunits. These have increased considerably by the year 2007-08 to 320 wells, 53 tube-wells, 195 bio-gas plants, 165 NADEP tanks and 153 biogas plants attached with household toilets.

The village came into the limelight in the year after 2001. The then Chief Minister of M.P., Shri Digvijai Singh visited this village on 16th March 2002 and expressed happiness over farmers adopting organic farming. He congratulated them for their efforts. He revisited this village on 23 September 2003 and appreciated the continuing work and environment created here.

All this happened under the inspiring and trendsetting decisions of the Agriculture Department under the leadership of Dr G.S. Kaushal, assisted by progressive farmers like Shri Hukumchandra and Shri Dube from the village. The farmers have great sense of confidence today.

Some farmers for a while did fall under Bt cotton propaganda but they also are now coming back to their old organic practices having faced considerable economic losses.

Farmers of Malgaon village got organic certification for their cotton produce from Skal from 2004-05. While they spent Rs. 895.86 per hectare on organic fertilizers as compared to chemicals which cost Rs. 2,318 and Rs. 500 in plant protection as compared to chemicals costing Rs. 2,500, the earning was Rs. 17,600 per hectare just from cotton crop only. They also earned bonus of Rs. 2,400 per hectare because of proper certification. Thus total earning of Malgaon farmers was Rs. 23,422.14 per hectare from cotton crops.

Malgaon also earned Nirmal Gaon award and its farmers learnt self-dependence through guidance and inspirational role of the fortnightly farmers' school (F.F.S.). In this regularly organized learning programme, farmers discuss their contemporary problems and are assisted by scientists from Agriculture College, Khandwa.The programme has been running since 2001.

With the information and training provided during F.F.S., farmers started recognizing friendly as well as harmful insects and are capable now of handling this problem organically. The farmers go to other villages for training other farmers. Six villages around Malgaon have turned totally organic now.

Here it is worth mentioning that the atmosphere generated in and around Malgaon has expedited adoption of organic farming in 35 villages of tribal block KHALPA in Khandwa. Nearly 3,914 farmers of KHALPA block are turning organic using their 20,041 acres of land.

North East

Assam

ORGANIC FARMERS ASSOCIATION OF ASSAM

Sonapur - Khetri Citrus Project

Project Office: P.O and P.S. Khetri, Khetri-782403, Kamrup District, Assam. Cell: 099540 60601 Email: absarh@yahoo.com, sgogoi@organicassam.org Web: www.organicassam.org

Guwahati Office:

Saheb Tilla, 4th Bye-lane (North), Mother Teresa Road, Guwahati - 781021, Assam

Ph.: 0361-2731144

OFAA was established in the year 2003 by a dynamic civil-servant and administrator, A.K Absar Hazarika, with Anil Boro as Secretary, and L N Mahanta as Honorary Adviser. The Society now has over 1,600 registered farmers. OFAA's technical team comprises graduates and postgraduates in agricultural and horticultural sciences, who provide technical know-how to farmers, and manage nurseries of citrus, medicinal and aromatics plants.

The Sonapur Citrus farm-belt:

Located at Sonapur, just 50 kilometres from Guwahati - the capital of India's northeastern province of Assam - the Sonapur citrus farm-belt covers over 2,000 hectares of hilly and virgin land.

Field visits and in-depth studies of the area's rainfall, topography and soil were conducted by horticultural experts from the Indian Council for Agricultural Research (ICAR) and Assam Agricultural University (AAU) which revealed that the soil was virgin, and untouched by chemical fertilisers or pesticides. It was, so to say, organic by default.

In 2006, OFAA's Sonapur farm-belt was accorded 'organic certification' by SKAL International of The Netherlands.

Apart from ginger, chillies and vegetables over 6,00,000 saplings of khasi mandarins and rough lemon have been planted.

Assam has over 600 varieties of medicinal and aromatic plants; nurseries have been set up to explore large scale production of these plants.

Presently, a distillation plant for aromatic oils and a citrus juice extraction plant are being set up.

(Source: Vincent Darlong)

Organic Farms

ABALI ORGANIC TEA ESTATE

Chottagola A.T.Road, Dibrugarh 786001 Assam. Ph.: 0373-2302650, 2300495, Cell: 9435031097, E-mail: info@abalio-rganictea.com, Web: www.abaliorganictea.com

Garden and factory: P.O.Roing, 792110, Dist: Lower Dibang Valley, Arunachal Pradesh.

Contact: Binod Saharia

The 65 hectare tea garden is located in the extreme North Eastern part of India (old North Eastern Frontier Agency, NEFA), in Arunachal Pradesh, known as the land of the rising sun.

Regeneration of forest in Jhum areas

This is also the land of Idu Mishmi and Adi Padum tribe who came centuries ago from China. This is where tea was first found in India by Robert Bruce and his brother C.A. Bruce, who was in charge of the British Gunboat division in the war with the Burmese occupying Assam in 1824.

Binod Saharia and his partners' decision to go organic was assisted by the timely intervention of Swami Valmiki Srinivasa Ayangarya who introduced the methods of Vrikshayurveda at the tea gardens in 2004.

Vrikshayurveda methods have improved the soil fertility, corrected mineral deficiencies, righted the pH balance of the soil and have almost eliminated heliopeltis, leaf blister and a host of other plant diseases and pests in the span of a little over a year!

More than 20 formulations have been developed using local vegetation; mostly wild fruits, grasses, leaves and weeds like guatemala grass, mechania, outenga, rabak tenga etc. Even parthenium (congress grass), lantana and water hyacinth, have been used.

A dry dairy of over 100 free grazing cows is maintained for dung and cow urine.

Two simple formulations are: 'sasyagavya' and 'chara sudha.'

'Sasyagavya': one part green biomass, one part cow dung and one part water mixed together and allowed to ferment in a drum for a period of 10-15 days. The resultant slurry is used as a foliar spray and as a soil drench.

'Chara Sudha' entails fermenting of waste in a covered vessel buried underground for a period of three months. The resultant liquid is a potent manure and growth promoter for all types of crops.

(Source: Communication with OIP)

SOCIAL WORK AND RESEARCH CENTRE (SWRC)

P.O. Runikhata 783 375 , District Kokrajhar, Assam, Ph.: 03664-236611, 276650

Contact: Loken Warie, Regional coordinator

SWRC is one of the outreach locations of Barefoot College of Rajasthan. Loken Warie is actively engaged in promotion of organic farming, renewable energy and outreach programmes in Assam.

(Source: Arise, CSE & TOI 9-2-2-2002)

SHANTI SADHANA ASHRAM

Vasistha, Beltola, Guahati-28, Assam

Contact: Sh. Hem Bhai

(Source : Bharatendu Prakash)

ASSAM GOSEWA SAMITI

Beltola, Guahati- 28, Assam

Contact: Sh. Nirmal Kr. Shastri

(Source : Bharatendu Prakash)

SHRI UMESH LOHKAR

C/o Hotel Madhuram, Old Jail Road, Golaghat-785621, Assam

(Source : Bharatendu Prakash)

North East

Mizoram, Nagaland, Arunachal Pradesh, Manipal

NORTH EAST INDIA AND ORGANIC FARMING: AN OVERVIEW

The North East Indian states of Assam, Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Mizoram, Sikkim and Tripura are organic by tradition.

The North Eastern Region, NER as it is generally known, is spread over 2.6 lakh sq km which approximates to 8% of India's geographical area and is home to 4% of India's total population. Being bestowed with favorable endowments of soil, agro-climate, agro and forest biodiversity, wetlands, good rainfall, flora and fauna, the people of this region have evolved as traditional tribal communities or clans with unique socio cultural moorings deeply embedded in the forests, hills, rivers and local biodiversity.

Because of its distance from the mainland, most policy and outreach programmes that were introduced into the country and spread quickly, have generally been delayed in reaching these distant lands. And so, it came to be that, the penetration and influence of chemical farm practices during the Green Revolution years remained to a minimum and the little that did reach was confined to the plains. Also being traditional communities a change would naturally infer an adaptation or switch in cultural rituals, and probably the reluctance to give that up may have acted in favour of retaining traditional agricultural practices in the NER. In the hills even today, agriculture remains predominately in the form of shifting cultivation locally known as 'Jhum.' Jhuming, of late, is viewed as environmentally unsustainable by policy makers and major attempts to wean people away from this traditional practice are underway.

As in the rest of the country, land here is state and privately owned, albeit with a difference. Private ownership falls under various systems of community ownership, for example, land owned collectively by the villagers or communities, land owned by the clans, land owned by the chiefs and land owned by individual families. The unique agricultural practices here are largely because of this peculiar land tenure system. And, though, 80% of the population depends on agriculture, the region reports 7.5% net sown area and only 1.5% of national grain production.

In the lower altitudes and mid-hill ranges of the region various horticulture and cash crops such as ginger, turmeric, areca nut, pineapple, large cardamom, passion fruit, oranges, etc. are being grown.

Rice is still the most important cereal crop in the valleys, plains and in the hill areas covering about 70% of total cultivated area. Besides maize, millets, potato, oilseeds (mostly mustard, rapeseed and sesame), cotton, jute, pulses, chilies, sugarcane, sweet potato etc. wheat cultivation is also gradually increasing. Fruits and vegetables make up about 5-6% of the produce.

Sikkim perhaps is the only region that has no intensive jhuming practice. 90% of the cultivated area in the plain areas of Tripura, Manipur and Assam are under irrigation. The rest are rain fed. Ginger, turmeric, arecanut, pineapple, orange, litchis, large cardamom, passion fruit, etc are grown in the mid hills. In the high hills and mountain areas the maximum cultivars are fruits like plums, pears, peaches, apricots, apples, potato, cabbage, cauliflower, radish, carrots, beans, broccoli, maize, millet and large cardamom. Wild Cardamom occurs naturally in the region. Passion fruit grows in the hills of Mizoram, Nagaland and Manipur as home garden fruit; however Nagaland and Sikkim in recent times have explored its commercial local and export potential.

NERCORMP, The North Eastern Region Community Resource Management Project for Upland Areas, a joint body of the GoI and United Nations is the chief official outfit working with agriculture activities in the region. It is in operation since 1999 in two districts each of Assam, Manipur and Meghalaya. The Ministry of Development of North Eastern Region (DoNER) represents the Government of India. The North Eastern Council (NEC) under the DoNER, looks into operational matters. The Government's attempts through NEPED (Nagaland Empowerment of People through Economic Development) and NERCORMP to promote alternate agri-methods in the past few decades is based on the premise of jhum being unsustainable from an ecological stand point.

On the other hand, there are strong arguments and independent studies indicating the appropriateness of jhum as a good agricultural practice for the NER. However, the external interventions promoted by official bodies as an alternative to jhum have brought in the cultivation of arecanut, ginger, pineapple, large cardamom and passion fruit in recent times.

A few representative stories are extracted below:

Organic Arecanut Cultivation

Stone Rynnaiw, aged about 40, from Upper Nongkyndang village in West Khasi district of Meghalaya, is an arecanut cultivator. He started arecanut cultivation in 1995-96, up scaling his plantation only about seven years ago. Today he has about 5,000 palms.

His arecanut garden is located on a gentle slope with black loamy soil, rich in nutrients. Originally the land was cleared by slash and burn method, and he intercropped arecanut with banana, papaya and lemon. He obtained the seedlings (about 2-3 years old) from a local arecanut grower. The variety planted here is known as Garo Kwai, as the original seedlings came from the adjoining Garo hill districts. He planted the saplings in the mouth of May-June, by digging 1 cft.pits and followed a random planting system to enable him to intercrop with banana, etc. At the initial stage he applied rice husk and wood ash around the arecanut saplings. He has no irrigation system but is entirely dependent on rainfall. Weeding is carried out twice a year in the months of May-June and September-October. All the accumulated grass is used for mulching. He has applied no other manure and has not encountered any serious pests and diseases so far. Occasionally high speed wind during flowering and fruiting cause some damage. Areaca is harvested twice a year (February-March for green nuts and May-June when the nut covers turn yellow. Harvesting is done by traditional method (sickle tied on the tip of a long bamboo pole). Each arecanut tree gives a maximum of about 400-500 nuts and a minimum of 250-300. All produce is sold to local traders from the plains of Assam.

Organic Ginger Cultivation

Robin Naiding (37 years old) from Bagadima village, belonging to the Dimasa tribe, hails from a very poor family and has seven children.

In 2003, he got a loan of Rs. 2,000 from Biate Cultural Organisation under Natural Resource Management Group (NaRMG) activities. He invested the entire amount for purchasing ginger. He purchased 285 kg @ 7.00 per kg and planted it on one acre of land.

The site, selected during January, was a sloping jhum land with loamy soil. The shrubs and weeds were cleared and left for three weeks to dry. The dried weeds were burned during the same month. In February, the burned debris was mixed with the soil by hoeing. Mulching was adopted for soil and water conservation. At the onset of the monsoon (March – April), he sowed the rhizomes (Nadia variety) along with arhar. At the border of the field, sajana was planted which acted as fencing plus provided vegetables. (Traditionally farmers grow ginger as a mixed crop along with cowpea, bean, maize, chilies, brinjal, cucumber, solanum sp, pumpkin, and papaya. The farmers believe that mixed cropping results in healthy growth of crops, better yields and also helps in controlling and reducing the pest population).

During the month of January-February, 2800 kg ginger were harvested. Once ginger was harvested, 300 kg good healthy rhizomes were sunned for a week and put aside in a thatched house for seed purpose. Robin Naiding sold 2500 kg @ Rs. 12 per kg and earned a profit of Rs. 30,000. In 2004, he planted 300 kg of ginger and harvested 3000 kg and sold it for Rs. 13 per kg and earned a profit of Rs. 36,400. He also purchased 50 ducks for rearing and sold their eggs.

With every harvest he started sending two of his children to school. Today he continues to cultivate ginger along with other farming activities and his dream is to farm on a larger commercial scale.

Organic Passion Fruit Cultivation

Lamak Kajung of Lairowching village of Senapati district of Manipur is from the Maram tribe and lives adjacent to the neighbouring Kohima district of Nagaland. Initially he learnt the art of passion fruit cultivation from the neighbouring farmers of Nagaland. He even brought the seedlings from Nagaland. He started passion fruit cultivation in 2001 and presently has about 12 acres of land under passion fruit cultivation and seedling nurseries.

Kajung chose a gentle sloping land with good soil for his cultivation and slashed and burned the area for field preparation. He weeds the farm twice a year and uses weed as mulch. Wire trellises support the spreading vines. Frequent inspections are carried out personally for signs of pest, so far, he claims, there have been no major infestations.

In 2004, with a total investment of Rs. 2.5 lakhs, he earned a total of Rs. 8.5 lakhs (Rs. 2.5 lakhs by selling fresh fruits @ Rs. 8 per kg and Rs. 6 lakhs by selling saplings).

Kajung received the 'Award of Excellence as Best Horticulturist' from SBI, Manipur during 2004-05 for his success in passion fruit cultivation.

Organic Pineapple Cultivation

Khoya Teron from the village of Kekangadong in the Deithor area of Bokajan sub-division in Karbi Anglong district of Assam has been successfully growing pineapple organically for several years. His total cultivated area is a little over 1.00 ha. Originally this was jhum area which he converted into a pineapple garden. His annual income from selling the fruit and suckers is more than Rs. 45,000.

Initially during the first three years of cultivation, Teron spent considerable time in weeding operations – at least thrice a year. His garden is now mature and the spacing of the plants is such that weeds are almost naturally suppressed. He now clears weeds only once a year. However, he spends considerable time in collecting suckers and clearing them periodically for proper maintenance of the garden. 'Overcrowding of the plants is not good for pineapple', he says.

Fruiting season, June through August to early September are particularly busy months as he must collect the mature pineapple on alternate days to minimize damage . He also gets a winter crop of pineapples, which he says, does not have much demand but is able to sell, due to his proximity to the Bokajan market.

NERCORMP CONTACT

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North East

Orissa

Interview: Prof. Radhamohan

Prof. Radhamohan is one of the founders of the organic farming movement in Orissa. He retired recently as Chief Information Commissioner, Orissa. Address: Sambhav, At/Post Rohi Bank via Kural – 752090, Dist.- Nayagarh, Orissa.

Claude Alvares: You have been one of the pioneers of organic farming in Orissa. How did you get into organic farming? When did you begin?

Prof. Radhamohan: I first read about organic farming in a German journal, 'Adult Education in Development.' That was a story about a farm in India, the detailed address was not available. Then about the same farm, another article appeared in Ideas and Action magazine then published by FAO. *The Hindu* (Madras edition) also later carried a full page write up, with photographs and detailed address. It was about a farm near Pondicherry. Manindra Pal was the manager of the farm. So I wrote a letter to him. He wrote back saying on so and so date I shall be in Bhubaneshwar and we could meet. I requested the then vice chairman of the planning board (who was earlier an agricultural minister) and both of us went to Manindra Pal and discussed. Then he said, you read from the magazine and newspaper and we discussed, but seeing is important. Why don't you come and see our farm?

So both of us went to his farm near Pondicherry Pilarkuppum which was called Gloria Farm. We saw things for ourselves. Then AME was organizing a training programme on ecological agriculture. My daughter attended it. Then we spoke to people at the agricultural department here. The gentleman who was Secretary Agriculture at that time was a B.Sc. (Agriculture). He jumped at the idea of organic farming and when I gave him literature, he said, professor, I have become a convert. You need not tell me more. He invited Manindra Pal, who went around the district, spoke with agricultural department officials and we sent some people to the Pondicherry farm as well.

Then we decided it is not possible to send large numbers of people to Pondicherry. We should have a farm here in Orissa which can be visited, where many people can see and think of organic farming themselves. So we scouted around for land and we chose the most degraded land with no top soil. The rainfall there was half that of Orissa. We invited experts from agriculture, horticulture and soil conservation. They all said it was a lost case and money and energy should not be wasted here. Agricultural Secretary Mr. K.V. Verma however said: 'The challenge is worth accepting. If organic farming succeeds here, it will succeed everywhere, so let us accept this challenge.'

Prof. Radhamohan

So we accepted. That was 1988. We started buying land there and started planting trees from the year 1990. That was the year also in which we introduced and we started organic farming. We found with little care and love for nature, nature responds wonderfully well. Number of people visited here. We decided we will not use any chemical. It should be absolutely chemical free and should incorporate as many legumes as possible. Adopt all possible soil and conservation measures and use various organic manures.

C A: How did you come to call your farm, 'Sambhav'?

Prof. R: When we discussed these ideas with the local people, they laughed at them, they pooh-poohed them. One gentleman stood up and said, whatever you say sounds nice but it is impossible. *Ye asambhav hai* (this is not possible). Therefore, we decided to name the farm 'Sambhav' (Possible) The same gentleman Mr. Purushottam Naik now visits the farm regularly and praises us.

Since then a number of people, including government officials, are visiting and organizing training programmes. Government officials by and large discouraged us. Anybody with some training in agriculture said it was a lost case. It is totally barren, with erosion gulleys and no soil. How do you think organic farming without external inputs and without any fertilisers or pesticides will be productive? But we were determined and today you find the plants are healthy, they look so happy and the yield is good. People from far off places also visit the farm. A girl from Australia stayed for a year, a young man from Germany stayed for 15 days. Now many people from, within the state, outside the state and abroad, visit the place and organize training programmes.

CA: What about the Orissa state government's perception of organic farming? Is it willing to support?

Prof. R: We have been persuading the government and they have accepted organic farming and incorporated it as a part of the agricultural policy of the state. The present agricultural director has an agricultural background. He has a PhD in agriculture and his good friend Ramanjeyelu is heading CSA (Centre for Sustainable Agriculture) in Secunderbad. Dr. Pali, although he has his own limitations in promoting organic farming – there is government pressure and the fertiliser lobby– he has come to the conclusion that we can't go further in chemical agriculture. It has reached a plateau elsewhere and although our consumption of chemicals is less, before we reach a plateau and travel the same path – we should switch over to organic farming.

STATUS OF ORGANIC FARMING IN ORISSA

(*Debjeet Sarangi, of Living Farms, gives an overview of organic farming in Orissa and the trials and tribulations faced by tribal farming communities in these fast changing times of contract and export oriented farming, centralised policies and the reality of sustenance during a discussion with OIP.*)

In Orissa, one will come across 2-3 kinds of stories. Sixteen percent of India's certified organic farms are in Orissa. As per NCOF data, Orissa exports organic products like turmeric, onion, aromatic rice, cotton and ginger. However, the fact is, these exports are done by big NGOs and a few traders. The other NGO groups of which there are many in Orissa, are working on organic farming interlinked with seed conservation, promoting SRI methods, home gardening, socio economic issues, womens' groups, small savings etc. A few of them have outreach programmes related to research in fundamental organic farming application and techniques.

If we restrict our understanding of organic farming to absence of synthetic inputs, then one can safely say that over 65%-70% farmers do not use synthetic fertilisers, simple reason being most of them cannot afford to buy synthetic inputs. Also Orissa, culturally, shares a close relationship with mother earth. Their understanding of earth is that of a biological being and the produce of the earth is the entire living system. It is believed that mother earth would also need a period of rest to recuperate and the 14th of June is celebrated as the day of biological rest for mother earth and generally no farming is done on that day.

The organic farming movement in Orissa is centered around insitu on farm research, seed conservation and rice diversity. Natabaraji has conserved on an ongoing basis over 300 varieties of traditional rice varieties. Sambav has 160 variety of paddy. Millet farming is also quite substantial. Like in other farming communities, here too, women play a significant role in seed conservation.

Our concern in the organic farming context is the upmarket trend and demand for converting farmers into mononculture production units. This is unfortunately at the behest and pressure from traders and the export sector. The principle of diverse, integrated self sufficient low input dependent farming has not been met in our state.

Debjeet Sarangi

This has a direct impact on the small farmer because for the small farmer self reliance and self sufficiency play key roles for survival. The government support is for farmers with certification who are already large well to do farmers. Since 80% of Orissa farmers are small and marginal, government assistance ends up in the wrong quarter.

The present trend of certification is not economically viable. We believe the government should take a realistic view on this and extend support to small farmers who like stated above form 80% of the farming community. Outreach activities should be at grass root level to reestablish location specific farming systems.

Oral history of the primitive Dongoria Kondh – one of the thirteen primitive tribes of Orissa – tells us about the practice of mix cropping of millets, oilseed, cereals, vegetables and herbs. According to some reports they used to practice mixed farming of 40-45 types of crops taking various factors into consideration like: family needs, land type, space available per family, time and extent of rainfall, sunshine hours, varietal characteristics (tall/dwarf/climbing / creeper/straight), location of bunds, taste, ecological & cultural value, labour, resource requirement and pest problem to decide on the crops to be grown, their combination and sowing time etc. Three of their major socio cultural functions are based on the agriculture cycle. Nua Khai is celebrated in September-October when the millets are harvested; Kandula Parba in Jan-Feb after the harvest of pulses and Chaitra/Maria Parba is the sowing festival.

The government run public distribution system (PDS) has been providing rice at a subsidised price through its outlets. The PDS has encouraged a new pattern of food consumption in the community The Dongorias are neither traditional rice eaters nor rice growers. However, the availability of rice at subsidized price has had an influence on the local farmers.The number of farmers producing local food crops to meet their food requirements is gradually decreasing. The young farmers from the community are moving to the valley and plains for rice farming. A move from highly diverse and stable farming which used to provide yields for an extended period, to a farming dependent for inputs (seeds, chemicals, credit etc) on external factors. In other words a reasonably self sufficient community in terms of food is becoming dependent on market forces for its very survival.

This has also had an impact on the rich crop diversity gradually bringing down the varieties to 16-20 from 40-45 there by adversely affecting the prospects of sustainability for farmers. Decrease in farm biodiversity is likely to make the livelihood systems extremely vulnerable. In case of pest & disease attack or erratic rain the entire crop (rice in this context) may disappear or decrease in yield as is happening else where in Orissa. Farmers' Rights are thus being reduced to only consumption within the parameters decided by more powerful and distant entities.

For subsistence farmers, traditional crop varieties are very important since these crops have harmonised over a long period of time with the environment and hence are easier to grow. Further, such varieties demand less external resource. This is also likely to have adverse impact on some of the expenditure-saving and non-economic livelihood strategies such as food collection and gathering. It could lead to a severe decline in the availability of overall food sources and food diversity. This assumes significance as is evident now. Food insecurity amongst the very poor is not due to inadequate food supply. Surplus yields of paddy in Kalahandi remain out of reach of people with too little money to purchase food on the market and too few other entitlements to access food locally. The survival and availability of local cultivated and uncultivated food is a political issue for security reasons as well. Moving out from the community in the absence of availability of food is likely to break cohesion, social fabric within the community and impact the beautiful culture of the Dongorias in undesirable ways.

The government officials have been slowly accepting organic farming. NGOs support it because the donors want to support it. It is our experience in the farm that when men and women come, women accept organic farming better than men. When tribal and caste people come, tribal people accept it better. In the same way, illiterate people accept organic farming better than the literate people and farmers accept it better than agricultural experts. This has been our experience. When teachers and students come, students accept better than teachers, which means people who are educated who have some education especially in agriculture, they have to first unlearn and then learn but for farmers they have nothing to unlearn. They quickly learn. This has been our experience at Sambhav.

CA: What about the issue of charging a premium for organic produce? Do you charge a premium?

Prof. R: Regarding price premium, fetching a premium price of organic products, it fetches a premium price but we don't insist on that. It is the people who are prepared to offer a higher price. Even the poor people now you can find many times buying organic products. They are ready to pay 20%-30% or 50% more than the market. For example, mango sells at Rs. 8-10 per kg but they happily buy at Rs.12 per kg for organic. Similarly coconut and lemon also fetches a higher price. But cost of organic production is less than conventional agriculture. So there is no reason why organic products should be sold at a higher price or should be unaffordable for the poor people or general people, since cost of production is less, you do not purchase any inputs from outside. It is healthier so people are too happy to buy. There is a distinct preference for organic products in the state. Even in Bhubaneshwar market, a farmer comes with small brinjals, indigenous varieties. Normally consumers gravitate to that point and the product is sold quickly. This happens in the small village level market or wholesale market or well. There is a yearning on the part of the common people for local and organic. They know the benefit of organic produce and slowly or steadily the number of farmers preferring organic methods of production is growing. Much still needs to be done.

CA: What do you feel about the recent turmoil in Orissa about the large scale development with Posco, Vedanta, Niyamgiri? How much do you think this is inconsistent with good agricultural policies and this is the new emphasis that they are giving to large scale areas being given for mining? Can that be in the interest of agriculture?

Prof. R: Mining is an extractive industry. No country in the world has prospered by selling ores. There is no such reason why there should be a sudden rush to use all the bauxite, all the iron ore as if the world is going to end in 20-30 years and therefore we must exhaust all the ore inside mother earth!

CA: We are facing the same problem in Goa.

Prof. R: I saw there too every ounce was for export. People are not taken into confidence and these industries like Posco promise to invest Rs.51,000 crores. Out of Rs.51,000 crores, what is the total money for buying machineries or developing infrastructure and how much will go to the people? That part is not disclosed.

If 75% of the people in the state depend on agriculture, then what will happen to the quality of life of the people? That is determined by one half of agriculture. Today if only 26% of the total GDP of the state is contributed to agriculture and 70% of the people live on that, then there is a mismatch between the number of people and the state of affairs of agriculture. There is hardly any public investment in recent days in agriculture. People are encouraged to borrow money from the banks. You borrow money and install a pumpset, borrow money, dig a well, borrow money, get electricity to your farm, to buy inputs. There are many hazards in agriculture like weather, floods, drought or pests. If for one reason or the other, the farmers lose and he has been encouraged all along, coaxed or cajoled to borrow money and something happens to agriculture adversely then the farmer has still to repay the debt. When he finds it difficult to get out of it, finally he chooses the extreme step of taking his own life.

It is an irony that the persons who produce food, the persons who produce cloth – farmers and weavers – two essential groups in society are forced to commit suicide and persons who produce software and hardware are fed so lavishly. We can go without TV sets, we can go without computers, that is not essential for living. We are facing this irony. They start with Rs.50,000 to Rs.1 lakh salary per month for software people, but farmers and weavers are forced to commit suicide.

Organic Farms

SAMBHAV

Rohibank – 752090, Nayagarh, Orissa.

(Contact person: Prof. Radhamohan, HIG – 238, Kalinga Vihar, Patrapada post, Bhubaneshwar – 752090, Orissa.
Email: radhamohan_cwsy@yahoo.co.in)

Sambhav is an organisation working on sustainable practices. Prof. Radhamohan is its founder and advisor. It is engaged in practising, demonstrating and training in organic and natural farming. Sambhav is developing an 85 acre farm purely on ecological principles.

(Source: Communication with OIP)

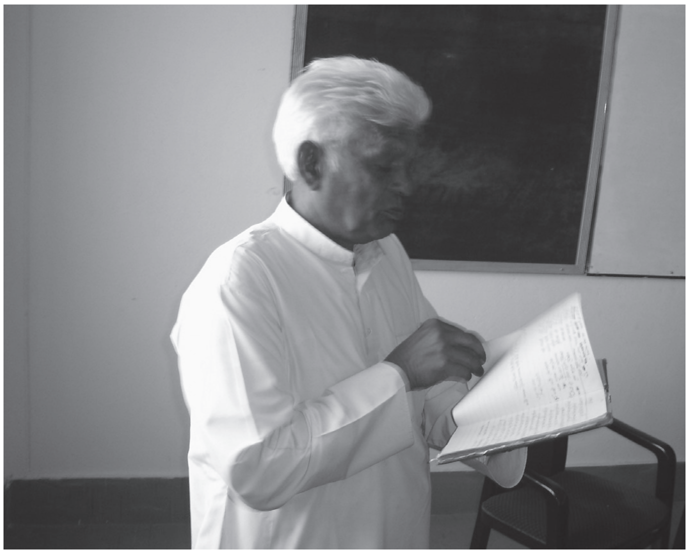
RATNAKAR SAHOO

Tapovan, At/Po Khuntasamalai, Patnagarh, Balangir- 767 025, Orissa. Cell: 09937746772

Ratnakar Sahoo at 76 is a bundle of energy and a treasure house of practical wisdom – of the original kind – gained from working close to the land. He has always been an organic farmer ever since he started farming actively way back in 1955.

According to him, agriculture consists of four parts: first and second, natural forests with all the small and big creatures therein; third, horti- and floriculture and fourth, crops and cultivated fields.

His 15 and half acre land follows this pattern in which 3 to 4 acres of the highland hilly area have been developed and maintained as natural forests. The low land area has been deployed for cultivation of paddy, ginger and turmeric. The areas interspersed in between these two and also within the crop fields have horticultural trees like mango, orange, lemon, ber,



Ratnakar Sahoo is one of the most experienced and dedicated organic farmers in the State of Orissa

wood apple and a couple of coconut trees. The farm depends on an open well and rain for its water needs. Some bamboo from the forested area of his farm fetches him a yearly income and so does the sale of fruits, paddy etc.

Sahoo tried, like most people, using urea for a couple of years during the peak of green revolution, only to discard it as useless to farming. He proudly says that all his life he has only been a farmer and nothing else. He is very vocal about his dislike for borewells because he thinks they eat into ground water reserves that nature in her wisdom has designed as underground storehouses for water. In the same breath he continues that Mother Nature in her wisdom created appropriate foods for all creatures and if man has manipulated this design, it is due to a lack of foresight and selfish greed.

He believes in living as closely with nature as far as present circumstance permit and very wisely says, 'What we eat will ultimately eat us.' According to him food and eating are habits that one must cultivate with great caution for one's own health and the health of the environment. His views on food scarcity are also quite strong. He is convinced that scarcity of food is a myth created by those who wish control over nations and people and thinks farm subsidy doled out in India to farmers is an ugly ploy to promote chemical inputs and keep the farmer under govt. control. On the subject of organic, he says the government continues to sit on the fence, is not doing enough to disseminate information and provide training in organic practices to farmers.

On his farm he uses compost, panchakavya, amritpani, bone meal and green manure. Cows maintained on the farm provide raw material for farm inputs. He says he has not bothered particularly with vermicompost as his land is on its own thriving with earthworms. Labour problem has made him reduce paddy cultivation and opt for fruit orchards. His personal message to promoters of organic farming is, while promoting any ideology one must bear in mind that every human being has a personal and social side to his personality and support from social structures come in so many numerous ways that one must always reciprocate with ones own contribution to them. This message he believes must be carried along as part of their promotional activity. His comments on labour reveal a deep connection with the land. He believes that a farm should have no major labour issues if one can only nurture insects, bees, birds, earthworms and sub soil micro and macro flora and fauna.

(Source: OIP interview)

DULAL

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Contact person: Kalicharan Marandi (Agriculture officer)

Dulal, an organizational member of OFAI, has been working since 2003-04 on issues related to organic farming. It works with close to 5,000 farming families through some 500 village level groups. Crops common to these farmers are paddy, maize, millet, tubers and roots, pulses, oil seeds, vegetables, mango, cashew nut, jackfruit, etc.

Dulal is a social work organisation working with downtrodden tribal peasants in Mayurbhanj district of Orissa. The vision is food sovereignty and economic solidarity. 'We believe in traditional food culture, traditional farming, traditional knowledge, traditional seeds and traits, localised seed exchange, localised intellectual property rights so that quality food is available to marginal farmers independent of external agencies. According to us, traditional farmer is an agronomist, entomologist, soil scientist, plant breeder, horticulturist, agricultural economist, food expert, health care and nutritionist, seed technologist all rolled into one. We do not believe in universalisation of any farming knowledge because farming knowledge varies from place to place. We strongly believe in process-oriented work rather than project-oriented. Organic terminology creates the feeling of export oriented agriculture and therefore we strongly believe in calling our practices Traditional Agriculture.

Our thrust is towards regaining and reclaiming our traditional orchards (wadi), foods ,agricultural practices, herbal health care, institutions, clothing, education and languages. Krushaka Katha,' our annual magazine, is published in Oriya.

(Source: Communication with OIP)

LIVING FARMS

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(Contact: Debjeet Sarangi)

Living Farms is a non-governmental and non-sectarian organisation, established in 2006 with the mission to uphold food sovereignty. They work together with the landless, small and marginalised farmers in the dry and hilly region of Orissa. The effort is to improve their wellbeing through ecological and sustainable agriculture, re-establish their control over food and farming systems through the conservation, renewal and rejuvenation of biodiversity.

Living Farms is committed to creating a future in which farming communities prosper, biodiversity and cultural diversity thrives and consumers get poison free food.

The driving convictions giving impetus to all their work are:

Food is a basic human right.

Agrarian reform should give landless and farming people – especially women – ownership and control of the land they work.

Food is first and foremost a source of local self sufficiency and nutrition and only secondarily an item of trade. Local self sufficiency of food comes first.

People who work the land must have the right to practice sustainable management of natural resources and to conserve biodiversity free of restrictive intellectual property rights.

The globalisation of hunger should be resisted with all force.

Everyone has the right to be free from violence. Lack of food must not be used as a weapon by the monetarily stable peoples or nations.

Smallholder farmers especially women must have access to accurate information in a language understood by them. Formulating agricultural policies should be a democratic process at all levels.

A close encounter with hunger and malnutrition in tribal villages of Northern Orissa in 1998 compelled Debjeet Sarangi, founder of Living Farms, to search for ways and means to respond to existing scarcity of food and nutrition. Having been intimately associated with tribals in Orissa for more than eight years, he tried to look for solutions which were closer to rural life. This search led him to work as a farmer under the guidance of an experienced teacher of ecological agriculture for one year.

Living Farms was formally initiated in 2005 with a conscious decision to work with landless agricultural labourers, marginal and small farmers towards making food security and sovereignty a reality.

Presently, fifteen hundred farmers are being directly reached through its efforts. Organisations like Sholai school and DDS have played major roles in this process and so have people like Ardhendu Chatterjee and Narayan Reddy.

(Source: website and communication with OIP)

TEAM FOR HUMAN RESOURCE EDUCATION & ACTION FOR DEVELOPMENT (THREAD)

Siddharth Village, PO Box NO:9, Jatni, Dist-Khurda, Orissa. Ph: 0674- / 2490516 /Fax-0674-2490160 Web: www.siddharthvillage.com

THREAD is a training organisation that believes the best is possible through the collective awareness of each individual.

The Orissa Nari Samaj (ONS), a federation of 55 block level Tribal Women's Organisations across 14 districts of Orissa is a unique spin-off of THREAD's training methodology. It is their flagship programme that has now turned into a movement of the tribal women to reclaim their traditional moorings that are rooted in the land. Consisting of 53 registered Samajas which oversee the functioning of cluster level committees and 3255 village level Sanghas with a total membership of 2,50,000, it is a strong grass root level womens' force to reckon with.

Within its multiple activities and approaches ONS promotes Organic Farming through trainings and technical inputs. Its approach to organic farming is placed in the ecological context of its operational areas which are drought-prone, with poor agricultural yields and degraded lands. There are now, within this fold, 800 men and women organic farmers. This encouraging trend has led to the setting up of two pilot demonstration projects.

ONS took up an anti GM Campaign at the panchayat level, to declare panchayats GM free. A singular achievement of ONS has been the banning of Bt brinjal by Orissa government, resulting in the saving of 362 indigenous varieties.

Its ongoing endeavour is for the promotion of organic farming and a Campaign for a GM-Free Organic Agricultural State.

(Source: website)

NATABAR SARANGI

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Residence address: Loka Samabaya Pratisthan, Vil. Nariso, Dist. Kurda, Orissa.

Shri Natabar Sarangi has been farming organically since1998. His work place is a village at Nariso, Kurda district of Orissa. His father was a traditional farmer. When the green revolution came in, Natabarji suggested they go in for synthetic farming. This continued till 1995. On taking over farming responsibilities after his father's demise, he realised that many negative impacts had come into the farm due to the use of chemical inputs. Soil deterioration, depletion in-fertility, waste crop production and more input cost. Inspite of this, he continued till 1995. After his retirement as a teacher in 1996 he cultivated CR 1009 (high yield variety) released by CRRI, Cattack and used all inputs as advised by agricultural department.

One day, a farm labourer was spraying carbo furol, a highly poisonous pesticide of the phorate group on the farm. He had only sprayed ½ an acre of the 3 and he simply fell down half conscious. Immediately he was rushed to the hospital. In a few hours there were dead snakes, frogs, earthworms and insects all over the half acre of land that was sprayed with pesticide.

This was a turning point in his agricultural practice. Shri Natabar took an on-the-spot decision never to use chemicals on the farm again. He buried all the pesticide stock with him, hoping for the best it would not leach into the surrounding area.

In the same year he read 'One Straw Revolution' and started cultivation using organic methods using high yield seed. Simultaneously he started to collect indigenous paddy along with his collegue Jubaraj Swain. In 1998 they had five varieties, in 2000, 40 and by 2007, 305 indigenous paddy varieties. Of these, 55 are very high yielding varieties, specific and well suited to drought, flooding, water logging, pest and disease conditions. His farm is frequently visited by nearby farmers. He uses green manure, 10 kgs per acre of dhaincha, a local plant of sesbania species. Director, CRRI, on a visit to his farm was pleasantly surprised to see the yield and health of the farm.

(Source: Communication with OIP)

D. NARAYAN

At/Po Makarajhola, via Kanchuru, Dist- Ganjam, Orissa.
Cell: 9861328455

D. Narayan's five acre farm is located in Makarajhola, Ganjam. Having farmed chemically since 1969 he switched to organic farming recently in 2005. He cultivates rice, ragi, chili, surgarcane, tomato, brinjal, lady's finger, beans, ridge gourd, bengal gram, green gram, harar, masur, til, sunflower and groundnut on his farm. The surplus yield is sold. Panchgavya, Jeebamrut, amrutpani, vermicompost, egg solution and kunnappa jal is prepared and used on the farm. So far he has not found major difference in yield after having converted to organic methods. The positive features however are that organic production requires less external inputs, and has less pests and less disease. His farm yields two tons paddy per acre, 90 tons sugarcane per acre, 6 quintals areca per acre. The farm produce is sold to Biosaurcina at Bhubaneshwar. He plans to continue with organic farming.

(Source: Communication with OIP)

RAMAKRISHNA

Secretory, Sambhav, At/Post Rohi Bank via Kural – 752090,
Dist.- Nayagarh, Orissa. Cell: 09937469961

Ramakrishna has been farming organically since 1989. He grows paddy, seasonal vegetables, coconut, lichi, sapota, mango and guava on his farm. He also provides training for processing produce into pickles and jams. Sambhav has 10 local groups covering more than 100 villagers and promoting self sustaining agriculture. They have outreach and training programmes that reach 7,500 farmers per year and publish material on composting health and organic farming techniques. Sambhav deals with two issues: ecology and gender. They have started forest protection movement and find that organic agriculture or non-violent agriculture is in tune with Sambhav's ecological ideology. Information on zero tillage cultivation, biodynamic agriculture is disseminated widely. They prepare a localised lunar calendar for biodynamic farming practices with information like: no farm activity on new moon days results in exceptional yield, harvest time, seed sowing in the morning, ploughing in the evening, full moon day being ideal for sowing etc. for the benefit of local farmers. Sambhav farmers practice zero tillage cultivation for wheat on 90 acres of dry, degraded, waste land with exceptional results. This miracle in farming initiated them to call their efforts Sambhav. Sambhav also conducts seed exchange and provides liaison assistance for farmers with government officials, NGOs and voluntary groups. They believe that 5 things in nature have to be cared for and kept in mind always: soil, water, light, air and sky. Says Shri. Ramakrishna, Treasurer of Sambhav and a school teacher . 'I am a school teacher. I have ample opportunities to spend time with students and the teacher community and have used this well to train and pass on ecology based ideology to hundreds of them. Professor Radhamohan is my inspiration and guru.'

(Source: Communication with OIP)

SHRI TRINATH BISWAL,

Rushikulya Rayat Mahasabha At/Post Sasan Ambagaon,
Via Hinjli, Dist Ganjam, Orissa. Ph.: 0680-2111680, Cell:
09937282330

The six acre farm is located in Badi Ambagaon, Ganjam. He has been farming organically since 4 years, before which he practiced chemical farming for 40 years. He grows paddy, betel, black gram, chilly, brinjal, lady finger, tomato, groundnut and bitter gourd. The surplus is sold. Pot compost and cow dung compost are used. He says, organic farming is most necessary for eco friendly agriculture but there is not enough support or initiative by the government to promote organic practices. He wishes to establish a nursery so that seedlings can be made available to local farmers throughout the year.

(Source: Communication with OIP)

AGRAGAMEE

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Bhubaneswar Office: ND-8, V.I.P Area, Nayapalli, IRC Village, Bhubaneswar – 751015, Orissa. Ph.: 91-674 - 2551123 ,
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Agragamee works in the remote and inaccessible tribal areas of Kashipur block of Raygada district of Orissa. The area was once a mix deciduous forest. The best contribution towards this community was identified as vegetable cultivation and promptly taken up in 2004. Three hundred farmers from 15 villages in 3 panchayats brought 300 hectares of land under vegetable cultivation with the assistance of Agragamee. Farmyard manure, compost, vermicompost, poultry manure, mulching, oil cakes, fungal and bacterial preparations were built into the farming process.

Today, in less than 4 years, the production has gone up from 210 tons initially to 4,926 tons. The total acreage brought under cultivation now is 2,445 hectares. All this has been possible through adoption of integrated nutrient management techniques. There is a now demand from the tribal areas of Koraput, Kalahandi, Nabarangpur, Nuapada and Kandhamal districts to replicate the programme of introducing organic agriculture. Production has diversified into cereals, pulses, oil seed, spices, etc., as per market demand. Certification has come into a few farms from SKAL and STC India. The farmers are now forming cooperatives and corporations for collective marketing of their products. The area produces surplus organic onion, available for procurement.

Agragamee has adopted organic agriculture as a consistent system approach based on the perception that tomorrow's ecology is more important than today's economy.

(Source: 'Problems and Prospects of Organic Farming – An experience of Agragamee.')

Orissa's NGOs maintain good collections of traditional seeds

BIOSOURCING.COM PVT LTD

A-41, Ashok Nagar, Bhubaneswar - 751 009, Orissa. Ph: 094 37016509, Fax: 067 4253-5509, Email: sales@biosourcing.com, Web: www.biosourcing.com & www.organic.co.in

Contact: Sidharth Routray Cell: 094370 16509. Anita Misra Cell: 094375-77324

Kui tribes from the jungles of the Eastern Ghats in India have believed that fertilisers and other chemicals are poisonous and should not have anything to do with their crop.

Biosourcing.com is working with these remote tribes of Orissa and delivering 100% organic products from farm to customer through an integrated process.

Certified organic products available are: spices, cereals, pulses, oil seeds, herbs and health food supplements.

Products are available as 'Kui Organic' and 'Nature Natural.'

(Source: Leaflet and web research)

SAMBANDH

Plot : 2926/5198, Jayadevnagar, Lewis Road, Bhubaneswar-2

Tel: 0674-2436660 Fax : 0674- 2435550. Email: Sambandhindia@gmail.com

Contact: Mr. Bibhukalyan Mohanty – Cell: 09437024367, Biswaprakash Bhattachaya – Cell: 09437023082. Puspalata Pani – Cell: 09437444550.

SAMBANDH has initiated the PGS movement along with establishing an organic bazaar in Orissa. Sambandh publishes quarterly journals on sustainable agriculture and health. These are available on request.

(Source: Brochure and web research)

DR SHAMBU PRASAD

Xavier's Institute of Management, Xavier Square, Bhubaneswar - 751 013, India. Phone:0674-3012345, Fax: 0674-2300995, Email: shambuprasad@gmail.com Web: www.ximb.ac.in

Dr. Shambhu Prasad has extensively documented work related to the SRI system of cultivation and has a database on these experiments. Some of the documentation and reports can be viewed online or one can request for copies by writing to him direct.

(Source: OFAI Archives)

AMBIKA MENON

c/o Gram Vikas, Mohuda Post, Berhampur – 760 001, Orissa.

(Source: ARISE)

JACINTHA VINCENT

Centre for Community Development, Ankoran Narayanapatna PO, Koraput – 765 114, Orissa.

(Source: ARISE)

SCMARCHALA NAHAK

Secretary, Rusikulya Rayat Mahasabha, Chatrapar, Ganjam - 761 020, Orissa. Ph.: 06811-262528, Cell: 09338059088

(Source: OFAI Archives)

ANNKURAN

Narayanpatna Post, Koraput district - 765014, Orissa. Ph: 06856 – 223147 (O), 222671 (R), 222297 (F), Fax: 06856 – 224264, Email: ankuran@rediffmail.com

(Source: OFAI Archives)

KASAM

Netaji Subash Bose Road, Phulbani, Kandhamal, Orissa. Ph.: 06842-253022, Fax: 06842-255206 Email: orissakasam@rediffmail.com/ orikasam@sancharnet.in, Web: www.kasamorganic.com

KASAM (Kandhamal Apex Spice Association for Marketing) has within its fold close to 12,000 indigenous organic spice farmers of the Khandamal hills of Orissa. It initially linked its operations to Government of India's Jawahar Rozgar Yojana (IJRY) to support adoption of modern organic farming methods with emphasis on growing high curcumin tumeric and low fibre ginger – aimed at the export market. The members being part of 61 local farmer groups benefited from capacity building processes that helped them regroup as KASAM at the end of IJRY project period.

Today they operate as a society for upgrading, purchasing, processing and marketing organic spices under the collective brand identity of KASAM.

KASAM's 5 acre central storage, processing, and business centre is a highly motivated marketing hub. It has complete business connectivity and is equipped with the full complement of processing equipment – cleaners, polishers, pulverisers, slicers, sieves – and has an installed packaging capacity of 2.8 MT a day.

(Source: Brochure & web)

PRADEEP KUMAR MOHAPATRA

Teacher, trainer/social activist, Bhimapur, Padmanabhapur, Ganjam - 761 007, Orissa

Has expertise in recycling farm wastes.

(Source: *Leisa India*, Sept 2007)

North East

West Bengal

Interview: Ardhendhu Chatterjee

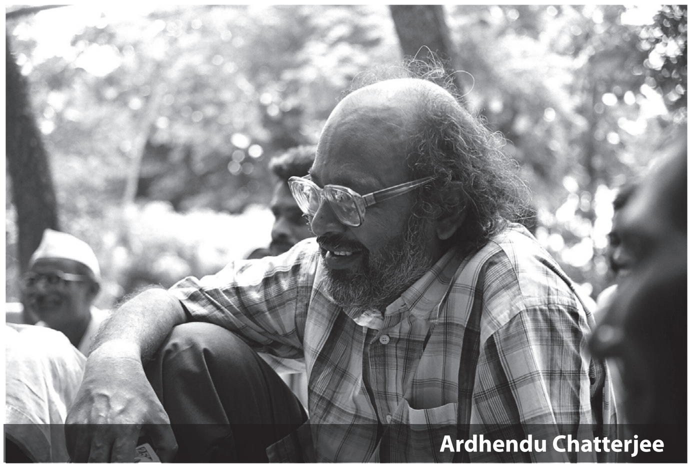
Ardhendu Chatterjee was training people to do ecological farming in the seventies. Address: (DRCSC), 58A, Dharmotola Road, Bosepukur, Kasba, Kolkata - 700042, West Bengal, Ph.: 033.2442.7311,2441 1646, Fax: 91-033 2442 7563, Cell: 9433079847

Claude Alvares: We don't know much about organic farming in West Bengal and the North East. Mizoram has declared itself as organic but we do not have the name of a single organic farmer from the region, though there will be many that are farming traditionally and are organic 'by default'. Is there good organic farming taking place in West Bengal and other areas of the North East or is there nothing at all happening? Could you give us an idea?

Ardhendu Chetterjee: Those doing serious work in organic farming are very few. WB has irrigation available and the rainy season is longer in the state than in many other parts of the country, so the ratio of irrigated agriculture is high. In irrigated districts like Burdwan – considered the granary of WB – the use of both chemical fertilizers and pesticides is quite high. In vegetable production, in the suburban areas of the 24 Parganas, North and South, and other districts, which supply most of the vegetables to Kolkata market, because of the monoculture situation, the use of pesticides and hybrid seeds is also quite high.

People who are by default organic are from the hilly areas of North Bengal i.e., Darjeeling district, Jalpaiguri, etc. The tea estates, because of the international markets, are into organic production especially those that are owned by private companies and corporations. Others are not doing much. There is just a little bit of involvement in it here and there. The other areas, like in the foothills of the Himalayas, Bankura, Purulia and part of Midnapur, the extreme end of West Bengal which borders Assam, where indigenous peoples are in large numbers, the soil is poor or rainfall is scanty and partly because the farmers are very poor and are into rental agriculture, the application of pesticides is negligible. So if we use the government definition for these areas, they are organic. However, they are still using some chemical fertilisers from time to time.

Those areas which need some irrigation and are growing vegetables like tomatoes, cabbage, cauliflower etc. and which have a slightly longer rainy season and don't have much of a winter season (Bankura, Purulia have a slightly cooler winter), they are using pesticides again. The highest use is in the cold season crops like cauliflower and in the rainy season for various kinds of gourds – especially the pointed gourd and cucumber – and brinjals. These are grown in intensive monoculture over a large area, month after month, year after year in the same plot so they are susceptible to certain kinds of disease.


Ardhendu Chatterjee

In general, earlier, there has not been much work in organic farming but the last 5-6 years we have been working mainly with poor farmers with small holdings since we consider it as part of the development work and much of the crops are for home consumption. For one, it must be understood that around 60% of the WB farmers have less than one acre holdings. You don't find large holding farmers anywhere except for a few small pockets. Much of the small holdings are in share cropping situation and therefore it is difficult to get them to change. WB has protected share croppers because of its socialist-communist background and their rights are protected by law. As a result, even though they have security of tenure, they do not see that they should plant trees on the land or follow a diversified system. So it has been very difficult.

Here and there you find examples of fairly medium or large farmers, who have maybe 10 or 15 acres of land and out of these I know around 2-3 people who have, on their own, gone for organic.

The organizations which are promoting this work more on their own demonstration farms (one person is Ashok Ghosh) in North 24 Parganas are very few. In Birbhum there is an organization, which helps in conducting programmes. They are doing some work in organic but again it is more on their own demonstration farm.

In the farmers' fields, I am not sure how widespread the movement is. In ten districts or so, we would have about ten in one place, or 50 or around 200 farmers, who are small farmers or mostly home gardeners. These are operating one bigha or two bighas of land and doing it organically. There are others who have say three plots amounting to 1/8th or one-tenth of an acre each and maybe in one or two of these plots they are doing organic and in the rest, conventional farming. When it comes to growing vegetables for the market, they tend to use chemical fertilizers.

As I said, our own organization is not promoting organic farming since we are doing development kind of work and our steps have been restricted mostly to the areas which have special problems, either because there is a problem of erosion or because of too much pollution in the soil. We have not worked much with people who are well-off and have irrigation systems but somebody has to work with such kind of farmers also. We have not been doing much work with them. Most of the development organizations have been working with small farmers.

Through one of the programmes of government with IPM which is working there is good exchange and rapport. Near Krishnapuri area, the Government of WB has a good demonstration farm that has become totally organic because of the persons involved. As far as small techniques of organic farming are concerned, such as inputs like vermicompost or biofertilisers, they are in use. But farmers are not necessarily using these inputs alone, they are using them together with chemical fertilizers. So there is this large section of farmers who are using some chemical fertilizers along with vermicompost but who have stopped using chemical pesticides. This, as far as the Government of WB is concerned, is promoted as organic farming.

CA: But do they have a policy on organic farming like the states of Gujarat and Karnataka?

AC: In WB, the agricultural policy is all dependent on the politicians. They are talking about reducing pesticides but that is only for the export crops like mango.

In the universities, they are academic about it and lethargic also since they argue about where will so much organic matter come from, etc., if the country is to go fully organic.

Interestingly, the government extension department, associations and to a lesser extent even some farmer-led unions, of late, have been talking more and more about problems with pesticides, fertilizers, and too much irrigation water being utilized. There are not too many examples (of organizations) which have tried large scale alternatives. We have tried alternatives and so has Ashok Ghosh's organization.

Here and there, you will find small examples. Within our network, there will be at least 15-20 consistent farmers who, for the last 5-6 years, have been organic. But in WB economy, if only you go organic, unless you also go for a mixed farming system, like rice- fish, economically it is much more difficult because everybody else around you is using intensive conventional practices. There is always some incentive being given by the Agricultural Department, such as distribution of free fertilizer and packets of seeds. Due to the predominance of the left-front government down to the panchayat, the government view of the truth has been considered, I think, a barrier in facing reality.

CA: Tell me what happened to the whole organic farming initiative associated with Mitra?

AC: Mitra is still around. That is the difficulty with organizations, and some NGOs, they have a big name and infrastructure but the second-line leadership has not been very effective. The people who gained leadership have died or are very old and there has been hardly anybody of similar stature to replace them. There has been some paucity of intellectual discourse and one particular school of thought has been given some encouragement. On the other hand, as you say, in social welfare the State record has not been very bad. It has been doing various kinds of things though a lot of the money in programmes like watershed programme has been unutilized and is going back to the Centre year after year. Anything that does not put the panchayat as the sole in-charge of the programme is not tolerated or encouraged. NGOs may do a lot of work. If they are foreign funded, they are considered to have an anti-national kind of stand. Because of this, there has not been much progress on that front.

Interestingly, one of the BJP-based organizations, partly because it has been doing plenty of relief work, has also been doing some promotion of agriculture and sustainable farming but in small areas. Nowadays, in many areas, fairly extensive-cultivation is undertaken on medicinal plants. In that context, chemicals are not used and so medicinal plants are being cultivated organically hence the demand for vermicompost, etc., is going up because of these plantations.

In the North East, I know of some organisations that are promoting organic agriculture, but they are not organic all the time. One, for example, is connected to the Don Bosco outlet in Shillong but again because of the political disturbance and other reasons, there has not been large-scale and consistent focus on organic. All other kinds of activities, movements, confrontation between church-sponsored organizations and other organizations (hamper the promotion of organic farming). In Mizoram, it is again different, there is no separate initiative to promote organic and people there don't care much either. We are not aware of it.

CA: The Mizoram government has come out with a policy on organic farming. I went to their website and found that chemical fertilizers and pesticides are still being used. They have not taken any precautions to see that no further pesticides are being used. I found that nothing is being done. The graphs for fertilizer use are going upwards because on one side the government wants to show that they are required and they are pushing it and on the other side the government wants to take advantage and export the produce as organic.

AC: Yes. These are not sincere efforts. These are just show case efforts. If the state can get some extra money or allocation, they are willing to do that also. On Monday, the same person is talking about phasing out pesticides and on Tuesday, about fertilizers and because of this kind of attitude in the department, there have been difficulties.

In the North East, somebody will have to go down there and do some more detailed documentation. There is no info available to find out exactly how much fertilizer is being used.

There is no immediate crisis of poverty since people have something to eat. The poverty can be questioned. They are not starving. If you look at the revenue spent on the consumption of pesticides, however...

In recent times there has also been a push for growing vanilla or non-food commercial crops like flowers (orchids) and even some fruits.

In adjoining Orissa, we have started talking to a large number of groups. Again they are in the small agricultural sector. There are one or two people with large farms. Most of the others are seasonal and they help farmers to grow vegetables but sustained/consistent programmes are very few. There is one large network. I myself have trained some of their people.

They are a large organization, with self-help groups. Again, by default, they are adivasi people and they do not use much of pesticide and therefore they are organic.

Now there is a possibility, within the next 2-3 months, to educate some farmers in Orissa. We have identified some organic farmers and some groups that are doing all sorts of work in smaller areas. So it should be possible.

Orissa has two extreme situations: one is that it has very large forest areas as compared to the rest of India and collecting forest produce is more important than doing vermiculture. Some areas are better off. Nowadays more and more foreign companies are coming in and setting up small factories in Orissa. One or two groups like Achut, Agragamee and others, are protesting and taking the case to the Supreme Court. Because of this, the State Government has always been anti-organisations, or anti this kind of NGO. Though some other NGOs are quite large, they hardly relate to each other. If those groups have been against the government, the others try not to associate with them. There are few groups like that but most are at loggerheads with the administration because they are trying to move the tribals out of the cultivation area (they call it proto-cultivation). This is all because of the factories, pollution and this kind of thing. There have not been any constructive engagements.

DEVELOPMENT RESEARCH COMMUNICATION & SERVICES CENTRE (DRCSC)

58A, Dharmotola Road, Bosepukur, Kasba, Kolkata - 700042, West Bengal, Ph.: 033.2442.7311,2441 1646, Fax: 91-033 2442 7563, Cell: 9433079847, Email: drcsc@vsnl.com, drcsc.ind@gmail.com, Web: www.drcsc.org

18B, Gariahat Road (South), Dhakuria, Kolkatta - 700 031, West Bengal. Ph.: 033 4734364 Fax: 033-4729939/4407669, Email: rana@ilcal.unv.ernet.in

Contact Person: Ardhendu Chatterjee (President), Anshuman Das (Secretary)

Development Research Communication and Services Centre is a non-government development organization working in 14 districts of West Bengal and other states. Its major concern is to address the issue of food and livelihood security of the rural poor through sustainable management of natural resources. The work is based on principles and actions, that are environment friendly, economically appropriate, socially just and developed through mutual cooperation.

They work through 500 family groups spread across 300 villages reaching about 8000 farmers. Using ecologically sound appropriate farming practices these farmers and home gardeners grow all vegetables, paddy, minor millets, oil seeds, multipurpose trees and weeds of indigenous variety. At group levels many are engaged in processing NTFP and food products. They conduct pro-poor farmer led action research on sustainable agriculture and have an impressive list of over fifty published titles in Bengali and English on sustainable practices through natural resource management. A list is available on the website along with a resource section that details several topic specific literature.

This work is implemented locally through a network of eight organisations and across West Bengal through a wider network of about 82 organisations. It also assists other groups in Orissa, Jharkhand and Bangladesh with capacity building. DDRC has been entrusted with the responsibility of coordinating a national level project involving 18 organisations in different states of India who have developed integrated bio-farms according to specific agro-eco zones. It leads the Awareness Development Dialogue for Action (ADDA) Network which is a platform of resource organisations and NGOs.

Some small organic farmers in West Bengal:

North 24 Parganas

Narayan Bachar of Bajitpur village, Tumpa Biswas, Nirmal Sarkar and Maya Mondol

South 24 Parganas

Sukomol Mondol, Banamali Das, Balaram Mondol, Pusghpanjali Ghosh and Gobardhan Patra

Purba Medinipur

Mrityunjoy Manna, Sashadhar Giri, Bidyut Bera and Sisir Das

Bardhaman

Tapan Nandi, Memari.

Contact details available with the organisation. Also, one may check the website www.drcsc.org for some case studies.

(Source: Communication with OIP)

MONINDRA KUMAR NATH

Narayanpur Village, Baduria (Taluk), North 24 Parganas (Dt.), West Bengal.

Or

C/o Society for Equitable Voluntary Action, 3 C, Milan Apartments, 52/3, Vidyayatan Sarani, Calcutta – 700 035, West Bengal.

Monindra Kumar Nath started farming on 1.52 hectares. Initially, he started agriculture in the high land and cultivated paddy, jute, mustard etc in the low land. After a few years, he started nursery beds in the highland.

Being motivated by Vikas Kendra, a local voluntary organisation, he started cultivation without using chemical fertilisers and pesticides, initially on an experimental basis on a small plot of land. Excited by the results he changed the method of cultivation on his other plots too. At the same time he started using organic fertiliser and organic pesticide along with preparing good quality of saplings in his nursery beds.

He says that by switching to organic farming the mortality rate of saplings has decreased, the quality of saplings is better, the saplings can resist the transportation hazards and their growth does not decrease due to transportation from nursery beds to distant places. The trees bear fruits almost at the same time as chemically grown plants or comparatively little earlier. All these allow him to sell the saplings at a better price.

Enterprises at the farm:

a. Crops: Jute, paddy, fish, coconut, arecanut, mango, vegetables, mustard, etc.

b. Nursery to raise vegetable, coconut and arecanut seedlings for sale.

c. Animal husbandry (he has some training in animal husbandry).

The farm produce is mainly for self consumption. The excess produce is sold in the open market.

(Source: AME, 1998)

DR MRINAL MITRA

AA/18, Baguiati, Deshbandhu Nagar, Calcutta – 700 059,
West Bengal.

Dr. Mrinal Mitra has conducted research on different types of soil using natural farming techniques and organic farming techniques and also their combination. His results indicate that a combination of the two can be very beneficial from the first season itself. The soil improves rapidly if organic inputs are used and the yield increases faster than if only natural farming techniques are used. Also, he emphasises the use of live mulch over straw mulch as in Fukuoka's method because straw has other uses in India.

Thus, natural agriculture with methods adopted from natural farming of Fukuoka, the use of organic inputs which are readily available and other suitable modifications to suit the local conditions is a much safer and more sustainable method of agriculture than the modern methods. The results of his work were published in two volumes of 'Natural Agriculture in the Tropics' and 'Debacle.' He was also the scientist-in-charge of the field station of Bose Institute in Calcutta. At present, he is working as an agricultural advisor for the Society for Equitable Voluntary Action, Calcutta.

(Source: Communication with CSE, 1993)

TAGORE SOCIETY FOR RURAL DEVELOPMENT

4, Khudiram Bose Road, Calcutta – 700 006, West Bengal.
Phone: 57574 Contact: Pannalal Dasgupta

The Tagore Society has been conducting experiments in no-tillage farming under the guidance of Dr Mitra at Bolpur since 1986. The experiments confirm that natural farming can yield average or above average yield of better quality crops without any tillage, fertilisers or pesticides. (Source: IFOAM Newsletter, December 1991 – CSE)

PROF SAIJI MAKINO

No 11, Andrews Palli, Santiniketan – 731 235, West Bengal.

Prof. Saiji Makino has a one acre orchard in the university campus where he has grown various fruit trees in the natural way. He was the translator for Fukuoka and has made his method and philosophy available in Hindi.

(Source: Communication with CSE, 1993)

SWARAJ KUMAR BANERJEE

Makathbari Tea Estate, Kurseong PO, District Darjeeling –
734 203, West Bengal.

(Source: ARISE)

ASIM ROY

PO & Vill. Khamarchandi, Haripae, Houghly, West Bengal.
Ph.: 03212-242684 (Source: Brochure)

SOCIETY FOR EQUITABLE VOLUNTARY ACTIONS

3C, Milan Apartment, 52/3 Vidyayatan Sarani , Kolkata 700
035, West Bengal. Ph.: 033-25785590/25776365/25789762,
Cell: 9433880092, Email: seva@cal2.vsnl.net.in & sevakolkata@gmail.com

Society for Equitable Voluntary Actions (SEVA) is a development organisation serving in North 24 Parganas & Birbhum district of West Bengal, promoting development alternatives through the initiatives of groups of rural poor.

SEVA believes the three enemies of rural society today are poverty, ignorance and apathy and through its work offers possible solutions to combat them.

Vikas Kendra, an effort of SEVA reaches out to around 50 villages involving itself in the field of agriculture, animal husbandry, health, education, appropriate technology etc.

(Source:Brochure)

ORGANIC CERTIFICATION IN WB FOLLOWING THE PARTICIPATORY GUARANTEE SYSTEM (PGS

West Bengal has 101 organic farmers registered through 17 farmers' local groups. IIRD and DISHA are the PGS Organic Facilitation Councils with 10 and seven grassroots level groups respectively. IIRD works through SEVA in West Bengal.

Details of these local groups and their organic produce is posted at the www.pgsorganic.in

Organic food shops and stores, green shops and green bazaars are blooming like flowers all over the country and in practically all the States.

This is a great sign that people are getting health food conscious and are willing to go out of their way or pay better for food that is nutritious and minus toxic pesticides.

How does one know that food sold is really organic and grown without chemicals? One way is to go for lab tests, but this is too expensive. In any case, lab testing may only tell you part of the truth.

Our best recommendation is grow some of the stuff you eat yourself. As the late R.T. Doshi in Mumbai, Chalasani Dutt in Andhra and scores of other organic farmers in these pages demonstrate, you can grow anything anywhere: not just in fields, but in empty polythene bags, on terraces, in your backyard. Once you get the knack of it, and grow your own food, there can be no greater satisfaction. That food you grow is 100% safe and good. It can only nourish both your body and your soul.

Suppose you can't do that?

Look for someone or a nearby farm and buy direct. Much of the chemical dirt in food often gets into it after it goes to a trader. The middleman not only adds costs and profits, he also adds adulterants and chemicals like fumigants and poison for rats and a host of other stuff that attacks food when it is kept for long in a storage shed or godown.

Now you say that you can't even manage that?

Then go to a green store. All the green stores listed in this chapter market organically grown safe food. In our opinion and in the opinion of many others including organic farmers, food in green stores should not be more expensive than food in other stores since the producer saves a good deal of money by not purchasing chemical fertilizers and expensive pesticides.

Nevertheless food in some of these green stores may be pricey. Buy it nonetheless. By doing so, you support attempts to grow food without the use of poisons. Second, you will go far less to doctors as safe food will translate into good resistance and immunity.

CHAPTER TEN

Organic Stores

Organic groceries at elements, Calicut, Kerala

Andhra Pradesh

SANGAM SHOP

Main Road, Zaheerabad, Medak District - 502 220, Andhra Pradesh. Ph.: 08451 282271,282785, 281725. Fax: 282271, E-mail: ddsrural@sancharnet.in Web:www.ddsindia.com

The Sangam shop at Zaheerabad stocks the produce from the fields and farms of the members of the Deccan Development Society (DDS) women sanghams all of who are ecological farmers. It also stocks the produce of many other organic non sangham farmers, thus playing a supportive role in promoting their produce.

Product list: White jowar (sai jonna), yellow jowar (pacha jonna), bajra, pearl millet (sajja), foxtail millet (korra), ragi, finger millet (taida), bengal gram dal, split chick pea (chanaga pappu), red gram dal, split pigeon pea (togari pappu), green gram, mung bean (pesarlu), green gram dal, split mung bean (pesara pappu), black gram dal (minupa pappu), horse gram (uluva), chili powder, turmeric powder, safflower oil, jaggery.

Neem cake is generated from two units run by the Sangams at Algole, and Hothi B., neem oil and vermicompost.

Products can be ordered in bulk. Details of rates, terms and conditions are available on the website. (Source: Website)

DHARANI FARM CO-OP LTD,

Chennekothapalli Village, Anantapur District -515 101, Andhra Pradesh. Ph.: 08559 202643/202149/202335, Email: organic@timbaktu.org, Web: timbaktu-organic.org

Anantapur district of Andhra Pradesh is infamous for its droughts and farmer suicides. Agriculture here is largely rainfed and over the years the land has become degraded by the excessive use of chemicals and continuous groundnut mono cropping.

Timbaktu Organic is in response to this crisis. This programme is a venture of the Dharani Farming and Marketing Co-op. Ltd.

Products: Peanuts, red gram, millets, great millet, groundnut oil.

We use the traditional cold pressed method (Ghani) to extract groundnut oil. This way the oil retains its full natural flavor, aroma, colour, and several nutrients that would be otherwise lost during chemical refining.

The Adisakthi Dharani, a chemical-free storage, processing and marketing unit has been set up to make sure that farmers get fair prices for their products. Products go by the brand name 'DHARANI.'

24 LETTER MANTRA

Sresta House', Plot # 7, LIC Colony, Sikh Village, Secunderabad – 500 009, Andhra Pradesh. Ph.: 040 27893028, 729 Fax: 040 27893029, Email: info@24lettermantra.com,

Web: www.24lettermantra.com

24 Letter Mantra produces a range of organic cold pressed oils. The cold pressing process leaves intact the beneficial nutrients and flavours that are naturally contained and eliminates any possibility of chemical residue remaining in the oil.

It has many stores in large towns across the country selling organic products. List of shops with addresses can be found on their website and also on the website of Bon Appetit.

SRESTA NATURAL BIOPRODUCTS PVT LTD

#7, LIC Colony, Sikh Village, Secunderabad, Andhra Pradesh.

Sresta's organic products are now available at Spencer's Retail throughout the country and more than 80 outlets in Hyderabad, Vizag, Vijayawada, Bangalore, Pune, Calicut, Chennai, Mumbai, Ahmedabad, Aurangabad, Delhi/NCR, Ambala, Vadodara, Gurgaon, Noida and Kolkata

BAPOOROUU PARUPUDI'S FARM

Tumkunta, Hyderabad, Andhra Pradesh. Ph.: 044 27812160, Cell: 9848160025

EARTH SHOP

SD Road, Hyderabad, Andhra Pradesh. Ph.: 044 27768967

OORVI AGRICULTURAL PRODUCTS INDIA PVT. LTD

H No. 2-5-054, Street No. 2, Vinayak Nagar Colony, Nakkalagutta, Hanamkonda, Warangal, Andhra Pradesh, Cell: 09395364937, Email: kmrreddy@gmail.com

Ctc: K.M. Raghava Reddy, CEO

Delhi

FABINDIA ORGANICS

Fabindia Overseas Private Limited, B-26, Okhla Industrial Area, Phase 1, New Delhi 110 020. Ph.: 011 40692000, Email: organicfoods@fabindia.com Website: www.fabindia.com

Fabindia believes in giving farmers a fair price for their produce and in supplying the very highest quality of food products to their customers. It sells its products under three basic categories: Green: Fully certified Organic Farm, Blue: In conversion. No chemicals used and Yellow: Natural. Farmed naturally without a history of chemical use.

Varieties of rice, wheat and maize, pulses, sweeteners, herbs and spices, teas and coffees, dry fruits and nuts, and processed foods from across the country are stocked on its shelves.

It has many stores across the country in large towns selling organic products and organic fabrics. List of shops with addresses can be found on their website and also on the website of Bon Appetit. (Source: Brochure)

NAVDANYA

Navdanya has its stores and outlets in Delhi and Dehra Doon. A detailed note on its activities is featured in the Delhi chapter.

@Stall No.18, Dilli Haat, Opp. INA Market, New Delhi.

@Organic Café, D-26, Ground Floor, Hauz Khas, Near Hauz Khas Market, New Delhi – 110 016, Ph.: 011 26532460.

@'HPCL Outlet' Sundar Nagar, Mathura Road, New Delhi – 110003. Ph.: 011 24358611, 24358144

@'HPCL Outlet' at Ashram Chowk, Delhi Ring Road, Mathura Road Crossing, New Delhi – 110 065. Ph.: 011 51627100, 51627500

@Shop No.35, Vasant Arcade, Vasant Kunj, New Delhi. Ph.: 011 41783205

BHATIA HEALTH FOODS

C-16, Masoodpur, Vasant kunj, New Delhi-110070. Cell: 09968177551 / 09910634333

DUBDEN HEALTHY LIVING

4A Shahpur Jat, New Delhi 110 049. Cell: 09810131343 /98103-02466, Email: dubden@organicbounty.com, Web: www.organicbounty.com

Dubden Healthy Living has been set up recently by Jayashree and Ganesh Eashwar, corporate executives who decided to 'return' to the earth in their own way. Fifteen years ago, they bought land near Bangalore and developed it into an organic farm.

Today, in association with others who are also into the health space, Dubden offers a wide variety of organic and health products.

Products

Beverages: organic tea, coffee, herbal teas

Breakfast: wheat porridge, muesli

Spices and condiments, herbs, Jams/jellies/spreads/pickles, Fruit Squashes/concentrates, wweetners, snacks, fruits and vegetables, healers, edible oils, flours/atta, grains, pulses/dals

Home delivery around Bangalore is offered, for details check website

WHOLE FOODS

New Friends Colony, New Delhi. Ph.: 011 26820701

SEED - the ecofriendly store

The Park, 15, Parliament Street, New Delhi 110 001. Ph.: 011 3733737, Fax: 011 3747123

Contact: Madhu Monga

Goa

AMBROSIA ORGANIC FARM

Farm: O2320 224657, Cell: 09822161593

Contact: David J. Grower

Farm products are available at the following outlets in Goa.

1. Ajay Supermarket, Mapusa Market, Mapusa, Bardez.
2. Orchard Stores, Anjuna, Bardez.
3. Neuton's Supermarket, Candolim, Bardez.
4. Lawandi's Supercentre, Candolim, Bardez.
5. Las-Vegas, Arpora, Bardez.
6. Parsekar General Stores, Mandrem, Pernem, Bardez.

GREEN GOA WORKS (GGW)

Leticia Apartments, Shop No. 1 & 2, Khorlim, Mapusa 403 507, Goa. Ph.: 0832 2255217, Email:greengoaworks@gmail.com, Web: www.greengoaworks.com

Contact: Capt. Joe Lobo. Cell: 09325637414

Green Goa Works is a non-profit company engaged in economical, eco-friendly solutions to environmental problems created by rapid urbanisation and faulty governance.

Organic foods: providing visibility to organic foods by finding outlets for the produce of organic farmers, stocking and offering counter sale services for fresh limited shelf life organic produce. Encouraging and educating small kitchen garden keepers to use organic waste from their own kitchens and yards; promoting the use of seeds from natural seed banks rather than the use of modified seeds.

Bio-pesticides: we are concerned by the way pesticides are used to get rid of domestic, garden and farm pests. We promote eco-friendly repellants, source out causes and correct the imbalance in nature.

ECO GREEN UNIT

GPE-2/1 – Govt Quarters, Alto Porvorim, Panaji, Goa - 403 521. Ph.: 0832 2412050, Cell: 09850466214, Email: ecogreenunit@yahoo.co.in, Web: www.ecogreenunit.com

Contact: Mrs. Ushasubramanian

Gujarat

ARYASANSKRITI

4, The President House, Opp. C.N.School, Ambavadi, Ahmedabad - 380 015, Gujarat. Ph.: 079 55221111, Cell: 09824019888, Email: aryasanskriti@yahoo.com

Aryasanskruti is an all-organic-store. From fuel to food, all the products on sale are organically grown or hand made. Aryasanskruti has an array of products which include cereals, pulses, jaggery, sugar, salt, oil, spices sharbats etc. and more. Aryasanskruti also stocks natural cosmetics, perfumes, nature friendly utensils and drapes and a whole range of small and big items, which will enable the consumer to lead a nature friendly and healthy life style.

The store is eco-friendly too. There are castor oil lamps instead of bulbs. The floor is of cowdung. No plastic is used as packing material. Instead the shop uses attractive eco-friendly packing for garam masalas, cloth bags for food grains, glass bottles for liquids and earthen cups for face packs. Empty glass bottles are accepted back for reuse.

JATAN VITARAN KENDRA

Vinoba Ashram, Gotri, Vadodara - 390021, Gujarat. Ph.: 0265 2371429, Email: jatantrust@gmail.com

Contact: Kapil Shah

'This is not a shop. It is a tool to raise environmental consciousness among people and a platform for farmers to fetch just prices for their organic farm products.'

Thus reads the slogan on the wall of the shop as you enter Ami-Dhara, the organic produce outlet in the plush Race Course Towers, in the upmarket Pashabhai Park residential colony of Vadodara city. JATAN (meaning 'care') is a voluntary organisation that promotes organic farming in Gujarat on the lines of Gandhian values and principles. JATAN is comprised of scientists, farmers and consumers who are concerned about agriculture, environment and health. Its primary objective is the promotion of organic farming. A pack of Tur dal being brought by a housewife at Jatan's outlet is not just grocery, but a message for sustainable living. Organic products like these are interesting tools to educate the urban consumers. JATAN runs two organic outlets on no-profit, no-loss basis. 80-90% of retail price goes to the farmer

The OASIS shop

GF – 10/11, Harmony Complex, 28, Nutan Bharat Society, Opp M K High School, Alkapuri, Vadodara – 390 005, Gujarat. Ph.: 0265 2351862 Email: theoasisshop@yahoo.co.in, Web: www.oasiswebsite.com

Contact: Ms Chaitali Mehta: 09924343085

Products: Daily supply of organic vegetables and fruits; all kinds of organic groceries, cereals, pulses, spices; healthy snacks-cookies, khakhra, roasted soybean, flax seeds; chemical-free soaps, bathing gels, perfumes, washing powder, etc.

EK LAYA - Organic food and Natural products

L-11, Anmol Complex, Near Sargam shopping centre, Dumas Airport Road, Parle Point, Surat – 395007, Gujarat. Ph.: 0261 2255133, Email:info@eklaya.com, sameer699@rediffmail.com Web: www.eklaya.com

Contact Person: Sameer Allawadi: 09824133044, Neha Dasadia: 09824158223

Main Products: Certified organic cereals, pulses, spices etc.; Grains: rice, wheat, etc.; edible oils, desi cow valona ghee, gir cow pure milk. All kinds of vegetables. Biscuits made from soybean, nachni etc.; pickles, jams, squashes, tea, coffee, tulsi teas.; natural soaps, shampoos, skin care products; natural candles, essential oils, aromatherapy products; Kansa utensils, areca utensils; organic clothes, organic ayurvedic medicines etc.

ASAL prepares food items the traditional way, providing employment to women through value added processing.

ASAL - The Organic Food & Natural Products Store

5, Tejpal Society, Nr. Fatehnagar Bus Stand, Paldi, Ahmedabad- 380 007, Gujarat. Phone:079 26622020/26622022, Cell: 9824019888 Email: asalworld@yahoo.co.in Web: www.asalworld.org

(Contact person: Shripal Shah)

ASAL (which means 'real' in Hindi) stands for a system of production that respects the general well-being of the planet. Its ideology is to promote a non-exploitative, environment-friendly, healthy society.

ASAL practises what it preaches. The ASAL premises were constructed using lime (i.e. without cement) and adopting the principles of Vastu-Shastra. The flooring and interior is also done with natural and traditional materials thus creating an environment which gives peace to the mind, comfort to the body and is hygienic at all times.

ASAL is perhaps the first modern commercial premise that deliberately shuns electricity. Lighting comes instead from eco friendly castor oil lamps and traditional hand operated fans provide soothing breeze. Rain water is harvested, traditional fuels like wood and coal are used for cooking.

All products sold at ASAL are organically grown, eco-friendly, completely natural and above all traditional items. They ensure that all their products are made following traditional methods of slow manual processing thereby eliminating use of fossil fuels and retaining the beneficial natural qualities of the product. All the products are hand made. This is a conscious decision to foster traditional craftsmanship and promote indigenous skills.

Products at ASAL include organically grown and produced food like cereals, all kind of pulses, spices, edible oils, jaggery & sugar, etc. There are a wide range of body care products made by aurvedic and traditional methods. Organic, non violent, handspun & woven textiles and clothing. Hand crafted toys. Handmade bronze, brass and copper utensils. Glass lamps etc.

ASAL products include a wide array of preparations prescribed by ayurvedic physicians called Vedraj that are made with the ayurvedic understanding of kapha, pitta and vayu - the three doshas or humours that are balanced in order to maintain physical and spiritual wellbeing.

ACE NATURAL FRUITS & FOODS PVT. LTD

205, Anurag Commercial Complex, R.C. Dutt Road, Baroda - 390 005, Gujarat. Ph.: 0265 341178, Fax: 0265 338044/337149

Contact: Sharad Shah, Director

Has an organic shop in Baroda.

GO-GREEN

20-21, Siddhi Vinayak Complex, SaPh.lite Road, Shivranjani, Ahmedabad – 380 015, Gujarat. Ph.: 079 26730448, Email: go-green2@yahoo.com, Web: www.go-green.in

Bulk Distributors of Organic Food in Gujarat

VASUNDHARA

G-22, Race Course Tower, Pashabhai Park, Near Natubhai Circle, Vadodara, Gujarat.

Ph.: 0265 2355695, Cell: 09904476052, 09904259110

MAHADEV-NEETA

'Vikalp,' Gandhi Ashram, Ahmedabad - 380 027, Gujarat. Ph.: 079 27557199, 27557878

VARDHIBHAI P. THAKKAR

Prakruti Kudarati Upchar Kendra, 14/8, Ashwin Soc. Lane, Opp. Fatepura, Paladi, Ahemedabad – 380 007, Gujarat. Ph.: 079 26637535, Cell: 09426484910

KAMLESHBHAI PATEL

Akshar Gram, B/h. Poonam Palace Hotel, City Gold Theater lane, Ashram Road, Navrangpura, Ahmedabad – 380 009, Gujarat. Ph.: 079 55611521, Cell: 09898463378

SARDAR PATEL FARM

Naroda-Kathwada Road, Kathwada, Ahmedabad – 382 340, Gujarat. Ph.: 079 22822752, Cell: 09825332814, 09825293304

MITHUN SHAH

Arya Sanskruti, 4-President House, Opp. C. N. Vidyalaya, Ambawadi, Ahmedabad – 380 015, Gujarat. Ph.: 079 65221111, 32987217

SARVADAMAN PATEL

Organic Hut, Bhai Kaka Krushi Kendra, Anand-Sojitra Road, At Ravipura, Po Dhuteli,

District Anand – 388 440, Gujarat. Ph.: 02692 281664

NISARG SEWA

Mohan Optician, Azad Chowk, Valsad - 396 001, Gujarat. Ph.: 02632 244246, 253223, Cell: 09825125074

BIPIN SHAH

Bobby Farm, At Paathri, Dharampur Road, Valsad, Gujarat. Ph.: 02632 253066, 241815

DILIPBHAI SHUKLA

Gram Shilp Khadi Bhandar, Vidya Nagar Main Road, Bh. Rashtriya Shala, Rajkot – 364 002, Gujarat. Ph.: 0281 2466141, Cell: 09426264247

SHEETAL-LOPA, NAMRATA-KETAN

'Mitra Eco-Friendly,' 'Lalit,' Junction Plot, Rajkot – 360 001, Gujarat. Cell: 09824240098

SWASHRAYI KRUSHI AHAR PARIWAR

G-3, Siddharth Flats, Kala Nala, Bhavnagar - 364 002, Gujarat. Ph.: 0278 2427166

GRAMODHYOG MANDIR

Gadhada (Swami), District Bhavnagar, Gujarat. Ph.: 02847 253076

NEHAL BHATT

'Origin,' B-10, Abhishek Complex, Bh. Turning Point, Near Takhteshwar Mandir, Waghawadi Road, Bhavnagar - 364 001, Gujarat. Ph.: 0278 2524394, Cell: 09824192383

MANOJ SOLANKI

Near Thakar Mandir, Main Road, Juna vas, Po Madhapar, Bhuj, Dist Kutch – 370 020, Gujarat. Ph.: 02832 240596, 240882 (R), Cell: 09825428100

RAJESH SHAH

'Sanskruti,' Bhuj Blood Bank, Shop no. 7, Lal Tekri, Opp. Rajendra Tractor, Bh. Telephone Exchange, Bhuj – 370 001, Gujarat. Cell: 09426712080

MUKESH TIVEDI

'Sanjivani,' Sumatinath Complex, Babawadi, Mandvi, District Kutch – 370 465, Gujarat. Ph.: 02834 223114, Cell: 09879357773

SATVIK

26, Banker's Colony, First Lane, Near Jubilee Ground, B/H Syndicate Bank, Bhuj – 370 001, Kutch, Gujarat. Ph.: 02832 651779, Fax: 02832 251914, Email: satvik.india@gmail.com

Millets: Bajara (Pearl Millet) – seeds and flour. Jowar (Sorghum) – seeds and flour.

Pulses: Green Gram – whole, split and dal. Moth Bean – whole. Black Gram - whole, split and dal. Cow Pea – whole.

Oil Seeds: Sesame – seeds, cold press oil and cake. Cotton - seeds, cold press oil and cake.

Cotton: Lint cotton of V-797 group of verity (locally known as Kala).

Medicinal Species: Senna – leaves, pods and seeds.

Crops having industrial use: Cluster beans – seeds and gum. Castor – seeds, cold press oil and cake.

Fruits: Mango (Kesar variety) – fresh fruit and pulp. Date palm – fresh fruit. Aonal – fresh fruit, extract.

Sapota – fresh fruit. Citron fruit – fresh fruit and pickles.

Can be supplied as certified organic on request: Cumin – seeds. Psyllium (Isabgul) – seeds and husk. Aloevera – fresh, extract, health drinks.

AGROCEL IND. LTD.

Koday Char Rasta , Koday, Taluka Mandvi , Bhuj, District Kutch - 370 460, Gujarat. Ph.: 02834 295403, 02834 295448, Fax: 02834 275423, Email: agrocel2003@yahoo.com, hashmukh.patel@agrocel.net, Web: www.agrocel.co.in, www.agrocel-cotton.com

Contact: Himanshu Baghel, Email: himanshu.baghel@agrocel.net, Cell: 09428401427 and Shailesh Patel, Email: shailesh.patel@agrocel.net Cell:09428401425

Food division products: Traditional basmati, cashew nuts, sesame, wheat, chick pea, gram, raisins, lentils etc.

Cotton division products: Cotton fibre, cotton yarn, fabric, garments.

Karnataka

GREEN CHANNEL

20/1, Ali Asker Road, Bangalore - 560 052, Karnataka. Ph.: 080 41235739, Cell: 09845177375, Email: greenchannelbangalore@gmail.com

Green channel is a shop for organic food products and garden inputs. Everything we deliver is sourced from original producers or marketing companies dealing in certified organic products.

Products: Staples, ready mixes, pulses, spices, oils, other condiments, beverages, pickles, jams, manures, insecticides, fungicide, gardening tools.

PRAKRITHI - ECO FRIENDLY SHOP

Airport Whitefield Road, Ramagondanahalli PO, Bangalore - 560 066, Karnataka. Ph.: 080 8475385 or 8524539, Email: dachandy@eth.net

Contact: D.K. Chandy, Anna Chandy, K. Thomas Chandy

KHANDIGE HERBS & PLANTATIONS PVT LTD

#1099, K G Halli, Bangalore – 560 045, Karnataka.

KHANDIGE ORGANIC HEALTH PRODUCTS

#68/1, Jaraganahalli (near Sarakki Gate), Kanakpura Main Road, Bangalore – 560078, Karnataka. Ph.: 080 26714599, Email: pureherbs@vsnl.net, Web: www.khandigeherbs.com

METRO CASH & CARRY INDIA PVT.LTD.

Survey No.26/3, 'A' Block, Ward No.9, Industrial Suburbs, Subramanya Nagar, Bangalore – 560 055, Karnataka. Ph.:080 22192000 Extn.2266, Fax: 080 22192249, Email: lokesh.krishnan@metro.co.in

NAMDHARI'S FRESH (2 stores)

#821, Kusal Arcade, 20th Main, 80 feet Road, Opposite National Games Village, Koramangala, Bangalore - 560 095, Karnataka. Ph.: 080 51103777, 51103778

Email: koramangala@namdharifresh.com.
Web: http://www.namdharifresh.com

#134, Doopanahalli Road, 60 feet Domlur Road, Indiranagar, Bangalore - 560 071, Karnataka. Ph.: 080 251152909/ 2910, Email: indiranagar@namdharifresh.com

NESARA

No.1116, Geetha Road, Chamarajapuram, Mysore 570 005. Phone: 0821-2330404

Nesara (which means sun) is the first shop exclusively selling organic farm produce in Mysore. It was started ten years ago by a few persons with a vision to promote organically grown foods. It grew rapidly and today has 160 members, 25 of whom are organic farmers, while the rest are members of the general public, who support the venture. There is a membership fee of Rs.1000. It is open every day, morning and evening, except on Thursdays. Fresh vegetables come in every Friday.

The farmers who supply the produce of their farm to Nesara are all from Karnataka. The sale price of the goods is decided by Nesara. Twenty percent of the returns are retained for running the shop while 80 percent is given to the farmer. Nesara stocks all kinds of grains, vegetables and fruits, as well as processed items like oils, herbal powders, juices, jams, dry-fruits, etc. The prices are very affordable and the shop is therefore very popular.

NIHAL MARKETING

No.6/1, Nirmal Building, 3rd Cross, Tulsi Thotta Lane, Balepet, Bangalore – 560 053. Karnataka. Cell: 09341845178

NILGIRIS

171, Brigade Road, Bangalore – 560 001, Karnataka. Ph.: 080 25581859, 25588401, Fax: 080 25582853, Email: giri@nilgris1905.in

GREEN BAZAAR

C/o Green Hotel, Near Premier Studio, Jayalakshmipuram, Mysore, Karnataka.

(Contact: Juli Cariappa, Ph.: 08221- 21010)

Green Bazaar is an informal association of organic farmers who decided to combine their efforts to market the produce of their farms. The bazaar is held every alternate Sunday on the lawns of Green Hotel, Mysore. The association has about a dozen members at the time of writing.

At the Green Bazaar one can get all kinds of organically grown products like rice, dals, pulses, ragi, tamarind, salad leaves, herbs, coffee and cardamom. Processed foods like honey, jams, juices and tofu can also be found. The hotel provides the tables which are laid out under a shade. Each farmer individually markets his/her products. This helps to keep prices down and also enables the farmers to gauge the demand for different items. The bazaar is patronized by tourists as well as local people.

The initiative has been able to create a direct producer-consumer interface and raise the awareness of people living in Mysore to the benefits and problems of organic farming. Since the bazaar began, the demand for different organically grown products has increased beyond expectation. The small number of farmer members, the infrequent periodicity and quality control are areas that require some improvement.

Green Bazaar has a membership fee of Rs.500 plus a nominal monthly fee to take care of expenses like advertising the dates of the bazaar and other local costs. Green Hotel however does not charge any fee.

Initiated by Julie and Vivek Cariappa, Green Bazaar has been in existence for a decade now and is a regular feature in Mysore.

Organic Sellers Meet

The Savayava Siri network for organic food distribution

SAVAYAVA SIRI - market linkage for organically grown foods

Nandana No. 7, 2nd Cross 7th Main, Sultanpalya, Bangalore – 560 032, Karnataka. Cell:09900961131

Contact: N R Shetty

Savayava Siri is the effort to supply poison free, nutritious and fresh organic foods directly from organic farmers through a network of organic outlets in different parts of Bangalore, Shimoga, Mysore, Channapatna, Davanagere, Dharwad. It endeavours to provide organic food to consumers at affordable cost.

NISARGA ECOPRODUCTS

570/1 'Padmashri Nilaya', III Main, IV Cross, N.S. Palya, BTM II Stage, Bangalore 560 076, Ph: 080 26784509, Fax: 080 26591729/080 26680995, Email: greenfound@vsnl.net, green@greenfoundation.org.in, gfbangalore@gmail.com, Web: www.greenconserve.com

For online orders: www.nisargafarms.com

The Nisarga Vividodesha Sowharda Sahakara Sangha Ltd. is an independent cooperative farmers federation registered in 2007 under the government of Karnataka Sowharda Act. Small and marginal dryland farmers belonging to seed bank management committees and village development committees, village level grass roots organization initiated by Green Foundation are members. Nisarga markets raw and value added agricultural products produced using ecological practices in addition to handicrafts and seeds of cereals, pulses and vegetables. Products are marketed under the brand 'Nisarga'.

Nisarga foods is an outlet for organic foods run by a federation of organic farmers who have been supported with seeds and expertise by the Green Foundation. The store also arranges for bulk supply of farm produce. Complete product list is available on their website.

(Source: Communication with OIP)

ECONET

Samskruthi, 22, Michael Palya, New Thippasandra Post, Bangalore – 560075, Karnataka. Ph: 080-25283370, E-mail: icra@bgl.vsnl.net.in

ECONET was one of the first organic stores in South India set up by ICRA fifteen years ago way back in 1994. The store operates out of ICRA office premises and offers fresh greens and grains on its shelves. It still enjoys the patronage of early converts who have over time remained true to the spirit of consuming organic food.

ERA ORGANIC

No. 348, Dollars Colony, RMV Club, Double Road, RMV II State, Bangalore – 560 094, Karnataka. Ph.: 41606003/41606004, Cell: 9900911777, Email: info@eraorganic.org, eraorganic07@gmail.com, Web: www.eraorganic.in

Contact: H.R. Jayaram, Chairman

Era Organic is the first certified organic shop based in Bangalore. It was set up in 2007 to facilitate a direct link between farmers and seekers of clean, healthful, poison free food by H.R. Jayaram a lawyer by profession and an environmentalist and sustainable practices activist by choice. It specializes in encouraging producer consumer interactions through fairs, meetings and farm trips. A wide range of certified organic products like vegetables, fruits, cereals, pulses and a variety of natural products like natural dyes, organic cloth, soaps, candles, handicrafts etc. are stacked on its shelves and made available through a door delivery system on request. Its eco farm, Sukrushi located at Marasarahalli in rural Bangalore attracts many a visitors. It is a living example of reclaimed degraded land converted from barren to fertile. This farm is known for its rich biodiversity, multiple cropping, water management through rain water harvesting practices etc. The 25 acre eco-coffee plantation at Cherambane in Coorg is also visited for its alternate ecological agricultural practices. Era Organic offers home stay facilities at Cheerambane, a completely green building within the coffee estate amid of Western Ghats. Collectively the Western Ghats farms produce, coffee, cardamom, cucumbers, beans, pepper, garlic, ragi, horsegram, coca, coconut, arecanut etc. all of which are marketed through Era Organic either as raw, semi processed or processed products. Era Organic is also exploring the possibility of promoting global communes at Sukrushi and at Coorg Cherambane Farms.

THE GREEN PATH

No. 32/1, New BEL Road, Seenappa Layout, Bangalore – 560 094, Karnataka. Ph.: 080 42664777, Cell: 9900911777, Email: thegreenpathbir@gmail.com, hrjorgfarmer@yahoo.com

Green Path is an environmentally friendly Eco-Stay service apartment placed in the centre of Bangalore city. It is a place of eco concern and awareness with independent essential facilities including organic food.

JAIVIK KRUSHIK SOCIETY

Lalbagh, Bangalore - 04, Karnataka. Ph.: 080 65624197/26577323, Email: jk_society@rediffmail.com, jaivik@vsnl.com

(Contact person: Rangaswami)

JEEVASUDHE ORGANIC PRODUCTS

Gandhinagar Main Road, Shimoga, Karnataka. Cell: 9845087558

(Contact person: Mallikarjun)

ADHI NATURALS

620, 6th Main, 11th Cross, J P Nagar 3rd Phase, Bangalore 78, Karnataka. Cell 9945517525, Email: info@adinaturals.co.in

(Contact person: Aperna)

SIMPLY ORGANICS

2069, 20th Main Road, 2nd Block, Rajajinagar, Bangalore 10, Karnataka. Cell: 9844064995.

(Contact person: Govind Kabadi)

HONEY BEES GIFTS

75/76, Aikya, 2nd Main Road, 8th Block, Jayanagar, Bangalore 82, Karnataka. Cell: 9845345349, Email: mmkumarswamy@gmail.com

(Contact person: Kumarswami)

BHOO SIRI WEEKLY ORGANIC SANTE

Gandhi Shanti, Prathistana Kendra, Near Kort, Dharwad, Karnataka. Cell: 9448130647. (Contact person: Hosamani)

ARAMBHA KRUSHI BALAGA

406, 14th Main Road, Saraswathipuram, Mysore, Karnataka. Cell: 9242457114, Email: brravimys@gmail.com

(Contact person: B.R. Ravindra)

ORGANIC IMPULSE

82, 5th Cross, Royal Hermitage, Gottigere, Bannerghatta Main Rd, Bangalore 83, Karnataka. Ph.: 080 26967682, Cell: 9844054469, Email: info@organicimpulse.com. (Contact persons: Sukant Adhikari and Anuradha Adhikari)

FRESH EARTH

C M H Road, Indiranagar, Karnataka. Ph.: 080 25215738, Cell: 9880007105, Email: jsomanath@gmail.com.

(Contact person: Somnath)

PRO NATURE ORGANIC FOODS PVT. LTD

2/1, 12th Cross, Kaggadaspura, C.V. Raman Nagar, Bangalore 93, Karnataka. Ph.: 080 32983773/25247256, Cell: 9341974822, Email: varun@organicfoodsindia.com.

(Contact person: Varun Gupta)

GRAMYA TURNKEY SERVICES (PVT.)

K-43, 2nd Floor, 14th Cross, 19th 'B' Main, 1st Block, Rajajinagar, Bangalore 10, Karnataka. Ph.: 080 23320789/ 23123652, Email: gramyaservices@gmail.com, Web: www.gramyaservices.co.in.

(Contact person: S.M. Hebbal)

GREEN FUNDAS

92, 5th main, 5th Cross, Kodihalli Extn, HAL 2nd Stage, Bangalore 08, Karnataka. Ph.: 080 40972576, Cell: 9886290013, Email: greenfundas@hotmail.com.

(Contact person: Amin Manjrekar)

PRISTINE ORGANICS PRIVATE LIMITED ORGANIC LIFESTYLE (DHARANI)

44/2a, Kodigehalli Gate, NH-7, Sahakarnagar Post, Bangalore 92, Karnataka. Ph.: 080 23620878/23534367, Fax: 23620879, Email: ecofoods@pristineorganics.com/ pristine-organics.com.

(Contact person: K.C. Raghu)

SUSTAIN LIFE PRODUCTS

Krac-A-Dawna, Organic Farm, Halaur Vill Birval Post, H.D. Kote Taluk, Karnataka 571 121. Ph.: 08221 238472, Email: krac_a_dawna@yahoo.com, Web: www.geocities.com . (Contact persons: Julie and Vivek Cariappa)

VARANASHI RESEARCH FOUNDATION

P.O. Adyanadka, Karnataka 574 260. Ph.: 08255 270254/270686.

(Contact persons: Krishna Moorthy and Ashwini Moorthy)

NAVADARSHANAM TRUST

A4, Whitefield Ville, ECC Road, Whitefield, Bangalore 66, Karnataka. Email: navadarshanam@gmail.com, Web: www.navadarshanam.org.

(Contact person: Nagarajan)

ORGANIC LIFESTYLE

Dharani Store, ISKON, Hare Krishna Hill, West of Chord Road, Rajaji Nagar, Bangalore 10, Karnataka. Ph.: 23578359, Cell: 9901670000, Email: charu@ecoagri.in. (Contact person:

(Charu Krishna Das)

THE HIGHER TASTE

Garna Garnet, 119/A/36, 9th Main, Behind Jain Temple, 4th Block, Jayanagar, Karnataka. Ph.: 42068110, Cell: 9901670000, Email: charu@ecoagri.in. (Contact person: Charu Krishna Das)

GREENS EXOTICA

566, 21st Main, 36th Cross, 4th Block, Jayanagar, Bangalore 41, Karnataka. Cell: 9880064863, Email: manju.wildlife@rediffmail.com.

(Contact person: J. Manjunath)

Kerala

ALTER MEDIA

Brahmaswam Madam Building, M.G Road, Thrissur – 680 001, Kerala. Phone: 0487 422974, email: info@altermedia-india.com or trc_altmedia@sancharnet.in

Alter Media (AM) is a one stop shop for eco friendly products and alternative literature. Started way back in 1987, attention was then focused on the publishing and distribution of books related to alternate approaches which helped to transform the sensibilities of the discerning reader.

Over time it has evolved, and having transcended the stage of mere distribution and propogation of such ideas it now concentrates on producing, sharing/distributing eco products and thus reaching the potential user in both the rural and urban areas. A M wishes to promote alternative rural systems to stem the onslaught of modern, industrialised methods.

Imbibing the idea of a diet that rhymes with changing seasons, A M distributes traditional herbal porridge during the month of Karkkidakam (July-August) so as to encourage a health-conscious society that is nourished by its own immediate surroundings.

(Source: Communication with OIP)

'elements'

4/1418B Customs Road, Kozhikode – 673 032, Kerala. Phone: 0495-2765783 (O) 2380344 (R), Fax: 0495-4040781

Second shop: Rajaji Crossroad, Near Indoor Stadium, Kozhikode, Kerala. Ph: 0495-4040784.

Email: tomy@elementsindia.net, elements@dataone.in www.elementsindia.net

'elements' is a business initiative that attempts to bridge the physical as well as emotional distance between the sensitive farmer/ producer and the conscious consumer.

A stone's throw away from the beach in Calicut (Kozhikode), Kerala, is where this a unique and very interesting store is located. The store was set up to give an impetus to the organic farming movement in India by providing visibility to organic producers and their products.

Entering the store barefoot on coir matted floor instantaneously takes you on to a peaceful, non- hurried, non-consumerist, needful purchasing experience. As you browse through the shelves you are astonished to find wares ranging from freshly delivered string beans and bitter gourd to grains and lentils, natural cosmetics, organic cotton and books. The food items on the shelves are grown organically, without chemical fertilizers or pesticides and are processed without artificial additives. The craft section mainly has cane, bamboo and paper products as 'elements' considers these materials to be more fitting the eco-friendly definition than stone, metal or terra cotta that involve intensive ecological destruction during production. Packaging, although utilitarian is still an issue and to avoid wasteful packaging, 'elements' offers its customers discounts when they bring in their shopping bags and also when they choose to buy things loose.

'elements' deals both in certified and non-certified organic produce. Each product is identified by the farm from where it is sourced and the details of the farmer/producer provides easy traceability.

Organic vegetables, fruits and grains are the main focus of 'elements' and it has a steady clientele built over the past ten years that sustains the store. Mango lovers eagerly await the March-May months when 'elements' gets the tastiest mangoes of the season from Anuragham and a few other organic farms from the southern region.

A second outlet with a coffee shop on one of the busiest city roads hopes to inspire a sense of reverence towards nature, which 'elements' believes can alone upturn the indigence of a weary cityscape. And we wish 'elements' all the goodwill and success in their endeavour.

PDS ORGANIC SPICES

Peermade Development Society, Valanjanganam, Kuttikanam P.O., Peermade 685 531,

Idukki Dist, Kerala. Ph: 04869 233988/ 233989, Fax: 04869 233 875, Email: pdsexports@sancharnet.in, Web: www.pdsorganicspice.com

PDS is a three decade old organisation working on integrated rural sustainable development issues through various programmes in organic farming, watershed management, womens groups, marketing of organic products etc.

The Peermade Development Society has pioneered organic cultivation of spices in India.

The PDS range of organic spices include ginger, turmeric, clove, nutmeg, mace, cardamom, vanilla, garcinia, black pepper and white pepper.

Seed spices like coriander, celery, cumin, fennel and fenugreek are in the process of organic certification. Several more spices are to be brought under organic cultivation in a phased programme.

PDS has been declared as a Centre for Excellence by the Department of Science & Technology, Government of India. CAPART, another organization in the Government of India's Ministry for Rural Areas & Employment, has made the Society its Resource Centre & Nodal Agency for south India. It works closely with the Spices Board of India in regard to programmes on organic spice production and export.

Product List: Black pepper (steam sterilised, Malabar/Tellichery grades/ground), white pepper (steam sterilised, whole/ground), turmeric(steam sterilised, whole/ground), ginger (steam sterilised, whole/sliced/ground), nutmeg, mace, clove, cardamom, thyme, rosemary, oregano.

MATHEW MOOTHEDATH

Moothedathu house, Arakkulam P.O., Thodupuzha, Idukki - 685 591, Kerala. Ph.: 04862 25201.

Making and promoting various agrobased value added food products.

Food syrups like pineapple, naruneendi, ginger, nutmeg, vilumbica wine and banana wine.

Pickles – mango, nutmeg, lemon, ginger, papaya.

Medicinal plants and herbs.

AVT NATURAL PRODUCTS LTD

S. Vazhakulam, Marampilly PO, Aluva 683 107, Ernakulam District, Kerala. Ph.: 0484 2677262/2677263, Dir: 0484 2677384, Res: 0484 2314429, Fax: 0484 2677512, Email: Thomas_kadavan@avtspice.com

Contact: M.Thomas Kadavan, General Manager

KERALEEYAM KALAVARA – Green Channel and Eco Shop

Municipal Market Building, Kokkalai, Thrissur 21, Kerala. Ph.: 0487 2421385 (O) /0480 2720144 (R), Email: keraleeyam_kalavara@rediffmail.com

Contact: C.A. Robin

MATA AMIRTANANDAMAYI ASHRAM

Amirtapuri P.O., Karunagapally, Kollam Dist. 690525, Kerala. Cell: 09895459746

elements

Tomy and Seepja, who started 'elements' in 1999, have this to say in a nutshell of their decade long experience in marketing of organic produce:

Presently 'elements' seems a complete store as it offers a wholesome basket of organic food products (except milk, milk products, meat and poultry though!). Elements's strength lies in the fact that we never shied away from dealing with perishables and unlike many other organic stores that end up stacking honey, rice and preserves, where the shelf life is comparatively easier to manage, our store has steadily increased its offer of seasonal vegetables and fruits. Since we consume everything that we sell, we realize how important variety is and that reflects on our shelves as well.

Dealing with organic farmers and farmer organizations has been a crucial aspect. Since organic quality and marketing do not readily go hand in hand, it was a tight rope act trying to balance supplies, infestation and timely payments during the initial phase. Things are certainly better as the customer base has considerably improved and we now have multiple supply sources. Parameters of conventional marketing do not apply when we deal with organic products as sensitivity towards ecology is paramount and every step is a challenge. Elements's corporate philosophy tries to encompass our 'marketing strategy':

1. The determining characteristic of all our business endeavours is 'organic' and 'fair' – the former denoting our relationship with the larger universe and the latter, the relationship with our fellow human beings.

2. We constantly strive to reduce the size of the 'environmental footprint' of the goods and services we deal in.

3. We seek to uphold principles of equity and fair play in dealing with our various stakeholders. This includes affirmative action in favour of primary producers of goods and services and preferential commercial dealings with those disadvantaged by global commerce.

4. We seek to define afresh and continuously extend the boundaries of corporate social responsibility and ensure that our business objectives are not merely aligned to but dictated by our responsibility as a corporate citizen.

5. We seek to set standards and serve as a benchmark for North- South business partnerships anchored on mutual respect, cultural sensitivity and global economic justice.

(Source: Seepja)

POABS SAFE FOODS

TC 11/769 (4), Green Valley Road, Plamood, Pattom P.O., Thiruvananthapuram – 4, Kerala. Ph: 0471 3293022

Madhya Pradesh

SRK ORGANO PVT. LTD

203, Sun View Residency, Old Palasia, Indore - 542 001, Madhya Pradesh. Ph.: 0755 3122611, Email: srkorgano@indiatimes.com

Contact: Rohit Singh Kaushal, Managing Director

Maharashtra

KAVITA MUKHI'S HEALTH FOODS

Mermaid Building, Juhu-Tara Road, Juhu, Mumbai 400 049, Maharashtra. (Landmark: Near Palm Grove Hotel), Ph.: 022 26184365, 26149626.

Conscious Food: F-39 Dhanraj Mahal, Chhatrapati Shivaji Maharaj Road, Apollo Bunder, (Near Gateway of India), Mumbai 400039, Maharashtra. Tele fax: 022 66548604/05 Email: info@consciousfood.com Web: www.consciousfood.com

Works: No. 318, Vasan Udyog Bhavan, (Off Senapati Bapat Marg, Opp Phoenix Mill), Lower Parel, Mumbai 400013, Maharashtra. Tele fax: 022 32453444/ 3243 5965.

Kavita Mukhi is a nutritionist who markets health food, advocates healthy living, counsels on health and nutrition and lectures and writes profusely on the same. Way back in the late 1980s, when the concept of natural and organic food was not common vocabulary, she had started a shop to market natural and organically grown foods.

Kavita Mukhi studied nutrition in Texas and Florida in the 1980s and learnt alternative healing from many world renowned teachers. She is considered India's pioneer in packaged organic food. Dr. Kavita advocates the necessity of incorporating superior nutrition into everyday living and centering one's life to living in tune with nature.

The company, Conscious Food, with her as founder director was set up in 1990 as India's pioneering company in natural and organic food. The company sources most of its products from small organic farms and farming communities from across the country. A rigorous check is maintained on quality and stringent standards of hygiene are enforced from farm to workshop and, from there on to the retail outlets in Mumbai, Delhi, Gurgaon, Kolkatta, Bangalore, Pune, Goa and Chandigarh.

The product list covers more than 100 natural and organic products. The Company's mission is to promote natural (whole, unrefined) and organic (chemical free) food. Also to support farmers and farming communities that produce organic food and to provide sound information and advice on nutrition to consumers. All products are certified by Ecocert and India Organic. Their philosophy is to work to a standard, and not to a price.

Conscious Food provides free delivery service within Mumbai municipal limits for orders exceeding Rs. 300. For other cities where their products are not available through retailers one may order from the Mumbai office. Orders exceeding Rs. 1250 are free of delivery charges. A detailed product list, addresses of their retail branches and other services are available on the website. Conscious Food provides a free nutrition counseling service by Kavita Murthy over email through their website.

Conscious Foods today is an independent company and Dr. Kavita Mukhi's association is limited to researching on new products and public relations. Her current passion is 'The Tea.'

CLEOPATRA ORGANICS

42 Gazdar Scheme, Flat No. 5, New Sharda Cooperative Housing Society, North Avenue Road, Santacruz (W), Mumbai - 400 054, Maharashtra. Ph.: 26047391, Cell: 09892325972, Email: www.cleopatraorganic.com

Contact: Vandana Shah

ECO FARMS (INDIA) PVT LTD

Mor Gardens , Dhamangaon Road, Yavatmal 445 001, Maharashtra. Ph.: 07232 42372/42222, Fax: 07232 45369, Email: ecofarms@nagpur.dot.net.in

A-405, Green Homes Residents, Co-op Hsg Soc., Sahar Pipe Line Road, Andheri (E) Mumbai - 400 059, Maharashtra, Ph.: 022 8302855, Email: ashikamor@yahoo.com

Contact: Sanjay Dehmukh, Cell: 09822006586

HARESH SHAH

Khadi and Village Industries Commission, Motilal Mansion, 4th Floor, 17 Napeansea Road, Mumbai -400 036, Maharashtra. Ph.: 022 23672583/ 23672865/ 23684710, Fax: 022 23633497/ 23671841, Res: 022 23684709, Email: haresh_shah@vsnl.net

Khadi & Village Industries Commission, 3, Irla Road Vile Parle (W), Mumbai 400 056, Cell: 022-26710854

NATURALS- A mission for natural living

Gramshree Krishi Gramyog Sanstha, 16, Prasaydhan, Mahalakshmi Nagar 2, Manewada Marg, Nagpur - 440 024, Maharashtra. Ph.: 0712 2749248, Cell: 09822469495

Contact: Sanjay Kashinath Sontakke

Products & Services: Nisarga Sanskar, Organic Farming, Organic Foods, Kisan Khadi, Herbal & Traditional products

ORGANIC LINK

Shop No. 8, Kailash Market, Padampura, Aurangabad, Maharashtra. Ph.: 0240 3293618

In Paithan Taluka of Aurangabad district, nearly thousand farmers are practicing organic farming in their farms. Most of these farmers own small farms of less than a hectare. For the past seven years, IIRD has been endeavouring to make available such organically produced food to the common man through organising weekly organic bazaars in Aurangabad city.

Products available: Cereals, pulses, vegetables & fruits, spices, processed products, honey, jaggery, organic inputs like manure, indigenous seed, herbal products etc.

AKBARALLYS (3 Stores)

10-C, Top Gear Petrol Pump, Bhulbhai Desai Road, Mumbai – 400 026, Maharashtra. Ph.: 23624137 / 23622599

Off. Linking Road, Turnor Road, Bandra(W). Mumbai – 400 063, Maharashtra. Ph.: 26404240

Woodhouse Road Opp., Charagh Din Colaba, Mumbai – 400 005, Maharashtra.

BAKE HAVEN HEALTH SHOP

Shop No. 2 Rajat Apartment, Mount Pleasant Road, Next to Shemaroo Video Library Mumbai – 400026, Maharashtra. Ph: 56643798 / 23671527

EATERNAL HEALTH & ORGANIC FOODS PVT LTD

Organic Foods & Natural Products, B/2, Rustom Baug, Sant Savta Marg, Byculla, Mumbai- 400 027, Maharashtra. Ph.: 022 65200541, Fax: 022 23748557, Email: info@eaternal.com, Web: www.eaternal.com

FOOD BAZAAR (4 Stores)

@ Phoenix Mills Compound, 462 Senapati Bapat Marg, Lower Parel, Mumbai – 13, Maharashtra. Ph.: 022 56490154

@ Sector No.-30A, Vashi, New Mumbai – 400 705, Maharashtra. Ph.: 022 27812616

@ Link Road, Lokhanwala Complex, Andheri(W), Mumbai – 53, Maharashtra. Ph.: 26393251

@ L.B.S. Marg, Near Thane Check Naka, Mulund(West), Mumbai, Maharashtra. Ph.: 55550605

FOOD SPOT

Shop.No.28, Hampton Court, Shaheed Bhagat Singh Road, Colaba Road. Mumbai – 400 005, Maharashtra. Ph.: 2218 9835 / 2216 4214

GREENWAY

(Organic food products since 1997, Nikhil Villa 19 , Carmichael Road, Mumbai – 400 026, Maharashtra. Ph.: 022 23526291, Email : nds59@vsnl.com

HYPERCITY

Next to Inorbit Mall, Malad (W), Mumbai, Maharashtra. Ph.: 4069 5578

NAVDANYA MUMBAI

Shop.10, Mayfair Housing Society, Raviraj Oberoi Complex, Off Andheri Link Road, Andheri (West), Mumbai – 400 053, Maharashtra. Cell.: 09920418027, Email : navdanyamumbai@gmail.com

MAGNA BOOK GALLERY & NUTRITION CENTRE

Sassoon Building, 143, M.G. Road, Kala Ghoda, Mumbai – 400001, Maharashtra. Ph.: 22671763, Email: sales@magnanutritioncentre.com

MAGNA NUTRITION CENTRE

2, Bhaveshwar Co-Op. Hsg. Soc. Ltd., 148-B, Dr. Annie Besant Road, Worli, Mumbai – 400 018, Maharashtra. Ph.: 2492 3579 / 2492 3580

ORGANO WORLD HEALTH FOOD

Ion House, Near Vegetable Market, Plot No 2, Sector 18, Vashi Navi Mumbai, Maharashtra. Ph.: 022 24901862

SPENCER'S

Inorbit Mall, Malad (W), Maharashtra.

SPENCER'S DAILY

Poonam Residency Holly Cross, Extn. Road, I. C. Colony, Borivali (W), Maharashtra.

VINITA MATHUR'S HEALTH SHOP

1B, Doctor Hub, 14, Pedder Road, Mumbai – 400026, Maharashtra. Ph.: 2352 4122

AUNDH (shop at)

Plot 2 & 3, Akshay Complex, Pushpak Park, ITI Road, Aundh, Pune – 411 007, Maharashtra. Ph: 020 26010586, Email:aundh.pune@fabindia.com

DORABJEE & CO PVT LTD

1-B Moledina Road, P.O. Box No 67, Pune - 411 001, Maharashtra.

GREEN GROCERS

28/2 Koregaon Park, Pune – 400 001, Maharashtra. Ph.: 020 26119654

HEALTH SHOP

Shop 1, 5th Avenue Building, Dhole PaPh. Road, Pune – 411 001, Maharashtra. Ph.: 020 26119679

ORGANIC AND NATURALS

1, Kamaljia Apartments, 1306 Shivajinagar, J.M.Road Bank of Baroda Lane, Pune – 411 005, Maharashtra. Ph.: 020 25536835, Email: organicnnaturals@rediffmail.com

NATURE'S BOUNTY

G II/6 Liberty II, North Main Road, Koregaon Park, Pune – 411 001, Maharashtra. Ph.: 020 26114627

RASHMI'S HEALTH FOOD PRODUCTS

Mahalaxmi Trade Links, Baner, Pune – 411 045, Maharashtra. Cell: 09850052296

SASSOON ROAD(shop at)

Sakar 10, Opposite Jehangir Nursing Home, Sassoon Road, Pune – 411 001, Maharashtra. Ph: 020-26124820, 020-26124832, Email:pune@fabindia.com

YASHWANT KRUSHI VIKAS SANSTHA

Taluka Karad, Satara District, Maharashtra. Cell: 09890071012

Contact: Ashokrao Thorat

The Yeshwant Krushi Vikas Sanstha in the last week of May each year organises fares and programmes related to agricultural activities. The event is looked forward to by the agricultural community of Karad and the neighbouring areas. It attracts farmers and the general public to its organic product counters. Contemporary and indigenous popular food snacks are a great attraction at these fairs apart from exchange of information and organic farmer networking. (Source: Jayant Barve)

ECO FARMS

A-16 Ground Floor, Sagar Tech Plaza, Andheri Kurla Rd, Sakinaka, Mumbai, Maharashtra. Ph: 022 28504434

Products:All dry provisions

KHADI BHANDAR- ALL STORES

Products: Cold pressed organic oils – coconut, sesame, groundnut - honey.

VENKAT IYER

ivenkat66@gmail.com

Products: Organic rice, moong, groundnuts, cold pressed organic groundnut oil, brown rice, poha

SUSHEEL BORKAR

spborkar@gmail.com

Product: Organic rice

DOWN TO EARTH

Ground floor, Commerce Centre Building, AC Market, next to ICICI Bank, Tardeo, Mumbai Central, Maharashtra. Ph.: 022 40042861

ADHARHSHILA

Mumbai, Maharashtra. adharshila.learningcentre@gmail.com

Products: Urad, moong daal and haldi.

Punjab

ORGANIC COTTONS

UV&W Products Ltd, GT Road (W), Ludhiana, Punjab. Ph.: 0161 5030198/200

Fax: 2783909, Email: mail@uvandw.com, Web: uvandw.com

Product Range: Men's wear, women's wear, infant wear, kids wear (boys).

HEALTH FOODS SCO1101

Sector 22-B, Chandigarh, Punjab. Ph.: 0172 270619 / 2706245

Sikkim

EKTA SELF HELP GROUPS

Mellidara, South Sikkim,

Contact: Mr. Ganesh Rai Cell: 0923236190

Products: Turmeric

HIGH ALTITUDE SPICES

Ravangla, South Sikkim 737 139

Contact: Mr. Sameer, Cell: 09733076313

Products: Processed fruits & vegetables.

MAINAM NURSERY

Namchi, South Sikkim

Products: Flowers

MEVEDIR

31-A, N.H. Daragaon, Gangtok, Sikkim - 737 101 Ph: 03592 232648, Telefax: 03592 232969 Cell: 09434356757, 09434750058, Email: rakesh@sibingroup.com / cwpl_gangtok@rediffmail.com, Web: www.sibingroup.com

Contact: Rakesh Raiwar

Products: Agricultural Products

MRS. ROMA LEPCHA,

Nari Jagriti Jhund, Chalisey, Rhenock Rungdung,, P.O. Rhenock, East Sikkim - 737 133. Ph: 09832343181

Products: Spices and Ginger powder

SANG MARTAM TEA GROWER'S CO-OPERATIVE SOCIETY

Sang-Martam, East Sikkim. Cell: 09434710304

Products: Tea

SIKKIM SUPREME

Topakhani, Singtam, East Sikkim

Products: Processed fruits like juices, jams, passion fruit juice, pickles etc.

TAMLING NURSERY

Hee-Gaon, West Sikkim - 737 111. Email: tamlings@rediffmail.com, Web: www.heebermiok.com

Contact: Birendra Tamling

Products: Cardamom capsule, seeds, seedlings, orchids, flowers

TEMI TEA ESTATE

P.O. Temi, South Sikkim - 737 134. Ph: 03592 261703, Cell: 09434377482

Products: Tea

Tamilnadu

AHUMCAARA

19/230 Kilpauk Garden Road (Next to Food World), Chennai - 600 010, Tamil Nadu. Ph.: 044 26211118 / 26211128, Email: ahumcaara@vsnl.net, Web: www.ahumcaara.com

AHUMCARA is an organic health & food speciality store which stocks packaged organic food as well as fresh vegetables and fruits. The main aim is to create awareness in society to switch to a healthier option of organic food. Ahumcara stocks grains, flours, pulses, jaggery, salt, rice (varieties), millets (varieties), oils, spices, herbs, hone, mixed products like papads, idli podis, salad mixes, pastas, cereals, vinegar, jams, sauces, pickles and also fresh vegetables and fruits.

Ahumcaara came into being two years ago. Sunita Shahaney its proprietor, is a staunch supporter of the organic farming movement and is a member of various associations like Navdanya, Tamil Nadu Organic Farmers Association etc.

A farmers' market is organized every weekend (Saturdays & Sundays) to sell fresh vegetables and fruits from as many organic farms in Tamil Nadu and Karnataka as is possible. Products are sourced directly from farmers and also from organic farmers' co-operatives that now exist in various states. Seminars, lectures and workshops are organized depending on availability of time and resources.

Ahumcaara encourages organic farmers to sell through this outlet without the involvement of middlemen as this raises the already high price of organic produce, making it expensive for customers – especially in the case of fresh vegetables and fruits.

As far as packaged products are concerned, plastic is still being used as there seems to be no other material to do the job as well. However Ahumcara is working out an eco-friendly yet practical method of packaging its products.

B.K.S. TEXTILES PRIVATE LIMITED

2/316, Kungumapalayam Pirivu, Palladam Tirupur Main Road, Naranapuram (Post), Palladam 641 664, Tamil Nadu. Ph.: 04255 253961 -63/ 255473-74, Fax: 04255 253960, Email: bksfabin@eth.net, mail@bksmills.com, Web: www.bkstextiles.in

Contact: K. Vijaya Saravana, Manager, Product Development

BKS is a Government recognised Two Star Export House whose product range also include organic cotton textiles.

BON APPETIT – The organic and health food shop

2/16 Ambour Salai, Pondicherry - 605 001, Tamil Nadu. Ph.: 0413 2338165, Cell: 09894030284, Email: bonappetit@auromail.net, Web: www.bonappetit.co.in

Contact: Bhupendra Maru

ECO GREEN UNIT

Suganthavanam, Sethumadai PO, Pollachi Taluka, Coimbatore - 642 133, Tamil Nadu. Ph.: 04253 244269, Cell: 09443366374, Email: ecogreenunit@yahoo.co.in, Web: www.ecogreenunit.com

Contact: S.K. Babu

GREEN ROOTS

Promesse, Auroville 605 101, Tamil Nadu

Contact: Ramesh Kumaar R.R.

No. 59, 12th Street 'E' Cross, Krishna Nagar, Lawspet, Pondicherry - 605 008, Tamil Nadu. Ph.: 0413 2256460, Cell: 09443179374

Organic produce: rice, wheat, jaggery, seasonal grain, pulses

Soil nutrients: vermicompost, azospirillum, phospho bacterium

Effective micro organisms (EM), Panchagavya and other natural agents

Medicinal plants & herbs; vegetable and fruits; cash crops and spices; food products: snacks, jams, pickles, eggs, dairy products; eco packaging and utilities: leaf plates, natural packaging materials.

KEYSTONE FOUNDATION

Keystone Foundation works with tribal communities on eco-development projects. Organically grown products available from these areas are: Honey-Sweet & Bitter, Mace, Bees Wax Candles;Arabica Coffee, Nutmeg, Silk Cotton Items;Mountain Pepper, cinnamon, Clove etc.; Nellikai Mouth Freshner; Nellikai Pickle etc.

It runs two green Shops and an Organic Bazaar.

GREEN SHOP

Unity Complex, Mettupalayam Road, Kotagiri 643 217, Tamil Nadu. Ph.: 04266 72277, Email: greenshop@keystone-foundation.org

Christurayan Building, Bedford Circle, Coonoor 643 101, Tamil Nadu. Ph.: 0423 238412

Email: greenshop@keystone-foundation.org

(Run by Keystone foundation, all products stocked by Keystone available)

ORGANIC BAZAARS

Email: greenshop@keystone-foundation.org.

Key stone foundation organises Organic Bazaars providing marketing opportunity for local producers.

Organic Bazaars are organised regularly at Ooty on Fridays, at Coonoor on Saturdays and at Kotagiri on Sundays. Organic Bazaar strives to provide good quality organic vegetables and fruits at reasonable prices. Consumer awareness and participation in the 'Organic Movement' is the prime aim of this effort.

Keystone Foundation is featured in detail in the Tamil Nadu Chapter.

KOLAM

F1, Kgeyes Iswarya, Plot No. 48, Rukmani Road, Kalakshetra Colony, Besant Nagar, Chennai - 600 090, Tamil Nadu. Ph.: 044 24900939/24919872, Fax: 044 24915767, Cell: 09840176656, Email: kolam@vsnl.com

Contact: C. Ranjith K. Henry

GREEN SHOP

Dr. K. Natarajan, No. 2 Poomalai commercial Complex, Kumalankuttai, Erode - 638 011, Tamil Nadu. Cell: 09442233144

Product: Rice, wheat, pulses, edible oils, vegetables, fruits, eggs, mushrooms, spices, tea leaves, coffee powder, natural herbal drinks, natural bath soaps, tooth powder, herbal hair oils and shampoo, honey collected from the hills, nutrient rich organic jaggery, amla candies etc.

NATURAGROS

14/1 Vasanta Press Road, Arunachalapuram, Adyar, Chennai – 600 020, Tamil Nadu. Ph.: 044 55850122 / 28111338 (Res) Email: naturagros@yahoo.co.in

Contact: A. Srinivasan

A. Srinivasan is the owner of Naturagros, a recently opened provisions store in Chennai which sells only organically grown or produced items. Farmers are welcome to bring to his shop vegetables, fruits, groceries, cereals or any other eco-friendly products for sale.

Srinivasan is committed to promoting organic farming and since it is important that farmers who switch to organic farming find a ready market for their produce, Srinivasan has made Naturagros his contribution to the organic farming movement.

'reStore'

Adyar Centre, No. 27/ 10, 2nd Main Rd., Kasturba Nagar, Adyar, Chennai - 600020, Tamil Nadu. Cell: 9884409566 / 9444166779 Email: sriram.sangeetha@gmail.com, Web: www.restore.org.in

Contact: Sangeetha Sriram

'reStore' is a volunteer run initiative for sharing restorative ideas, practices and knowledge. It runs an organic foods store. Fresh fruit and vegetables are available every Tuesdays and Saturdays. The product list includes rice, pulses, nuts, ragi, bajra, jowar, thinai, samai, atta, cold-pressed oils, powdered jaggery and spices. Honey, jams, pickles and natural soaps, etc.

One is advised to check timings on the website before planning a trip to the store and to carry along their own bags, containers (for oil).

'reStore Earth Connections' promotes sustainable, eco-friendly practices and organises farm visits, workshops, talks, film-screenings and discussions on social and ecological issues.

SUNBIRD NATURAL PRODUCTS (CERTIFIED)

The Centre for Learning, Organic Agriculture and Appropriate Technology (Cloaat), P.O. Box 57, Kodaikanal 624101, Tamil Nadu. Ph.: 04542 230297/ 230393/ 230487, Email: cloaat@yahoo.com, Web: www.cloaat.com www.sholaicloaat.org

Products: Coffee: powder, beans raw and roasted, pepper, cheese, ghee, avocado, jackfruit, orange, gooseberry, strawberry, litchi, guava, custard apple, hill banana, banana, carrot, brinjal, beans, radish, beetroot, cabbage, cauliflower, tomato, potato, coriander, mint leaves, palak, vermicompost, panchagavya.

THE ECO-NUT- Health food shop

@ J's Heritage Complex, Opp. Milk Union, P.T. Road, Kodaikanal -624 101, Tamil Nadu.

@ Shop No.3, 1st Floor, E-34, Second Avenue, Above SBI, Besant Nagar, Chennai – 600 090, Tamil Nadu. Ph.: 044 24919592, Cell: 09444046299

Contact: Malathiram

Stocks Home Made: Whole wheat breads, muffins, jams, peanut butter & pickles, muesli, curds, sattu mavu.

Other Products: Whole wheat flour, brown rice, cheese, raw honey, herbal tea, shampoos, organic dried fruits, vegetables.

(Source:Brochure)

TIRUPUR GREENSHOP

M. Kathirmurugan, 87. J.G. Nagar, 60 Feet Road, Opp I.O.B. Bank Tirupur 2, Dist. Coimbatore, Tamil Nadu. Cell: 09842273433/ 09003777867 Email: vazhgavaiygam@gmail.com . Contact: M. Kathirmurugan

M. Kathirmurugan is the founder of the trust. He would like to enhance his activities and create a good public platform to promote nature products. He already has two organic shops.

AMETHYST

14, Padmavathi Road, Jeypore Colony, Gopalapuram, Chennai – 600 086, Tamil Nadu. Ph.: 044 28353582

AMMA NAANA

100, Chamiers Road, Chennai – 600018, Tamil Nadu. Ph.: 044 2440146, 24337812, 24350596

AROGYAM

B45 Alagesan Nagar, Opposite Govt. Hospital, Chengalpet – 603 001, Kancheepurm District, Tamil Nadu. Ph.: 04114 230625 / 04114 570855

ENFIELD AGROBASE

3, 1 Cross Street, Kasturibai Nagar, Adayar, Chennai – 600 020, Tamil Nadu. Ph.: 044 24420605, 24424766 Fax: 044 24911396

LIMRAS ENTERPRISES (P) LTD.

Calve Chateau'808, Poonamallee High Road, Kilpauk, Chennai – 600 010, Tamil Nadu. Ph.: 044 26402885, 26402886

MAGIC MONKEY SHOPS

No.11, Vishwanathan Street, Srinivasa Avenue, R A Puram, Chennai – 600 028, Tamil Nadu. Ph.: 044 24618400, Cell: 098415 94816, Email: ensignchennai@rediffmail.com

MAISON DES GOURMETS

5, Cenotaph Road, Second Lane, Chennai – 600 018, Tamil Nadu. Ph.: 044 64502050, Fax: 044 24332610, Email: info@maisondesgourmets.com, Web: www.maisondesgourmets.com

NATURALLY AUROVILLE

30, Khader Nawas Khan Road, Chennai – 600 006, Tamil Nadu. Ph.: 044 28330517, Fax: 044 28330518, Email: naturalyaurovil@vsnl.net

NATURALLY AUROVILLE BOUTIQUE

8, Khader Nawaz Khan Road, Chennai

NUTS 'N' SPICES

#11, Chinnaiah Street, T.Nagar, Chennai – 600 017, Tamil Nadu. Ph.: 044 28341240, Fax: 044 28342450, Email: dinesh@nutsnspices.in

SIMPLY MMM...

AC52, 4th Street, Anna Nagar West, Chennai – 600 040, Tamil Nadu. Ph.: 044 26200507

SRI KALKI AGENCIES

No.23, Old No.12/2, Srinivasa Perumal Sannadhi, III Street, Royapettah, Chennai – 600 014, Tamil Nadu. Ph.: 044 28352873

SUHAIL ENTERPRISES P. LTD.

33, 2nd Main Road, Kasturi Bhai Nagar, Adayar, Chennai – 600 020, Tamil Nadu. Ph.: 044 24453780, 24453808

SUNDAY SHANDY

(Weekly Sunday Organic Bazaar), Chennai, Ph. – 24991203

COIMBATORE

ARYA

Organic Food for Healthier Life, 39/41 C, Sengupta Street, Ram Nagar, Coimbatore – 43, Tamil Nadu. Cell: 09894011088, 09843235110

MAGIC MONKEY

No. 3, Tirugnanasambandham Road, Race Course, Coimbatore – 641 018, TamilNadu. Ph.: 0422 24504415

FARM FRESH

No.1, Kuyilapalayam, Auroville – 605 101, TamilNadu.

POURTOUS

Aspiration, Auroville - 605 101, TamilNadu. Ph.: 0413 2622152, Email: pourtous@auroville.org.in

CASABLANCA

165, Mission Street, Pondicherry – 605 001, Tamil Nadu. Ph.: 0413 2226495

ENERGY HOME

Natural Health Food Restaurant, 35-A, Chetty Street, Pondicherry – 605 001, Tamil Nadu. Ph.: 0413 2339666, Cell: 09443371096, Email: energyhome@rediffmail.com, Web: www.energyhome.tripod.com

FOOD BREAKS & ORGO LANDS

3/39, S.V.PaPh. Salai, Pondicherry – 605 001, Tamil Nadu. Ph.: 0413 6451011, 2354921, Email: sjs14042006@yahoo.co.in

GRINDE R. SRIDHARAN

25/27, Saint Louis Street, Behind Raj Niwas, Puducherry – 605 001, Tamil Nadu. Ph.: 0413

NILIGRIS

19, Rangapillai Street, Puducherry – 605 001 Tamil Nadu. Ph.: 0413 2336604, 5200255

SRI RAMANA SUPER MARKET

No.26, Thamarai Nagar, Thiruvannamalai – 606 601, Tamil Nadu. Ph.: 0240 235561, Cell: 094432 89422

KUDUMBAM

No. 17, Highways Colony, Subramanyapuram, Trichy 620 020, Tamil Nadu. Ph: 0431-2331879, 2331842, 2332175, Fax: 0431-2332175, Email: kudumbamtry@eth.net,

Contact: Mr. Oswald Quintal

For details of farm produce and related services refer Tamil Nadu main chapter.

Uttar Pradesh

ORGANIC INDIA PVT. LTD.

22/196, Indira Nagar, Lucknow - 226016, Uttar Pradesh. Ph.: 0522-2351317, 2351846, Fax: 0522-2352832, Email: info@organicindia.com

HEALTH FOOD CENTRE 8/1

Dr U N Brahmachari Street, (formerly Loudon Street), Kolkatta - 700 017, West Bengal.

Uttarakhand

NAVDANYA

Shop 8, Shiva Place, Opp. Uttaranchal Secretariat, 57, Rajpur Road, Dehradun

Ph.: 0135 2743175, 2749931

(A part of this extensive list of organic stores has been contributed by Bon Appetit, Tamil Nadu)

West Bengal

SATTVIC FARMS

Flat 4A, North Tower, 4th floor, 2/3 Judges Court Road, Kolkata – 700 027, West Bengal. Ph.: 033 24495374, Fax: 033 24495374, Cell: 09830053601, Web: http://www.satavic.org/organic_food.htm

Sources of organic milk:

MADHYANCHAL ORGANIC FARMERS' ASSOCIATION

B-116/3, Indira Nagar, Lucknow - 226016, Uttar Pradesh. Ph.: 0522 2350844, Fax: 0522 2350844 Extn. 21/22/23/24, Email: info@iofa.org.in

MAHA MAYA PARIWAR

Mohit Complex, Napier Town, Jabalpur, Madhya Pradesh. Ph.: 0761 2904800, 2411919, Email: juzer@mahamayaindia.com, info@mahamayaindia.com, mahamaya_shaktipeeth@yahoo.co.in

Mumbai: 022 26285131, 09820223141, Delhi: Mr. Nautiyal Vijendra Cell: 09810574257, Kolkata: Mr. Joshi S. K. Cell: 09831322057

NUEZIN INDIA

A/10, 204, Karishma, Karve Road, Kothrud, Pune - 411 038, Maharashtra. Ph: 020 25459694, Fax: 020 25443715, Email: rohinipune.2007@rediffmail.com, Web: http://www.antya.com/detail/Nuezen/55039

PARAM DAIRY LIMITED

Address: Param Tower, 11/5B, Pusa Road, New Delhi-110 005. Ph.: 011 25820071- 74, Fax: 011 25820071-74, Cell: 09811514309, Direct Num: 011 25820008-9,

Email: sales@paramdairy.co.in, rkarora@paramdairy.co.in, rk_arora2007@yahoo.com

The future of organic farming is squarely in the hands of the children of organic farmers. They are acutely conscious of this fact. If children continue to go to schools whose curriculum is designed solely for industrial employment, there is not much chance the next generation will take its rightful place.

The fact that migration of farmers in their thousands from rural areas to cities takes place every year is no secret. In fact, as Devinder Sharma has stated in his interview (see Delhi chapter), the influential ruling elites of this world roosting in the World Bank and other obnoxious institutions, are actively engaged in promoting the idea that another 200 million people should be encouraged to leave the countryside and merge their skills and destinies with the cities.

They say that this is in the best interest of the country's economic development and of the human race.

That is why we decided to have a special chapter on education for the children of organic farmers.

We have also included here a list of a number of institutions that welcome rural children on their own terms. There is no attempt to disconnect their links with the land, with seeds, with animals, with the soil.

They try to make biodiversity, agriculture, animal husbandry, nutrition, etc part of the normal curriculum of the child.

They attempt to innovate so that they do not kill the spirit of the children or their desires.

They ensure that the joy of learning is always protected.

Organic farming holds the prospect of one of the most exciting curricula in the world. To be a good organic farmer, there is need for knowing and understanding the soil, its life, flora and fauna and their role in maintaining soils, the mechanics of harvesting and using water intelligently, the nature of forests, climate change and greenhouse gases, and a host of other subjects. How children would love to get into all of these!

Instead, we continue to punish them with the boring fare laid out by an Englishman in 1835 which was essentially designed to create a nation of peons and clerks.

Chapter Ten

Learning Organic Agriculture

Interview with U Subba Raju

Claude Alvares: What was interesting was your story of the way in which you have changed your approach to children in terms of involving them in a certain sense in leading the activities. I have not found it in other places. In your experience, have you found it in other places - about listening to children?

U Subba Raju: Not much exactly. I got attracted to education because I liked working with children. We tried to incorporate various ideas. One of the observations was, how easily children learn certain things if you just shift the focus to what is relevant to them.

There was a boy who was not at all interested in any of the subjects till the day we bought 4 thappetas (big drums) for the school. We were looking for a teacher to teach the children how to play them. Suddenly this boy picked up a thappeta, and started to play it. Till that moment, he had had no source of recognition from the school because he was not interested in anything - be it academic, craft or art. He was not doing well in any of the things the school was offering. But when he started playing thappeta well, he became a completely new person. Suddenly he became a hero; he was in great demand for all the cultural programmes in the school and also outside. Interestingly his performance in academics also started improving.

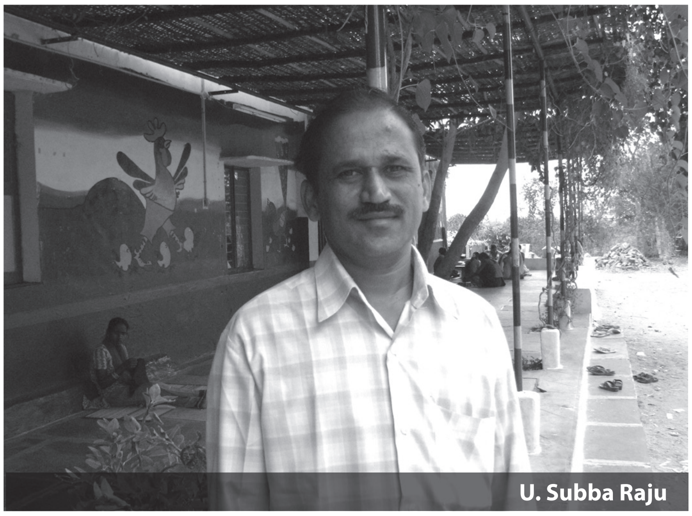
C A: Did he have a natural ability to play or did he already know to play.

U S R: He did not learn it specifically from anyone, but his community had that skill which we too were not aware of till then. So he had heard a lot of it, had probably seen a lot of it too. May be he had played a little bit with his aunt, uncle and some others. But when this instrument became accessible, and since there was time and freedom for exploration in the school, he took to it spontaneously.

In the school, during intervals and break time, children are free to do anything. So there was a lot of time for practicing and he became a Guru in playing thappeta. At that time he was in the sixth standard. And he became a guru. Even the teachers started looking up to him. This particular incident has actually influenced our education programme very much and we started to incorporate this idea in many activities in our schools. The basic idea is that children, especially in rural areas, know quite a lot of things, and schools can achieve a lot if this is recognized and children's strengths are respected. The schools can achieve much more, if they make time, space and resources available for children for pursuing their interests.

The same thing happened in agriculture in our school. When we brought buffaloes and cows we found that children whom we least expected started getting interested in them. They started taking the lead. Very small children were able to handle big animals. They were so happy in doing and initiating a lot of agricultural work that we took it up as part of our education programme.

In general in most of the schools, only meritorious pupils get recognition and the rest are just a mass. If there is an opportunity for everyone to be able to come forward, take the initiative, find the right niche, then excellence happens organically.



U. Subba Raju

In the beginning, ours was like any other alternative school where the focus was on having alternative methodologies of teaching and learning. But our area of interest was mainly academics. Isn't it boring, meaningless and painful for children who have learnt so much from their lives, who are sort of 'gurus' in many life skills, who know many things better than the teachers, to be 'continuously taught' academics by the teachers all the time, however joyful and meaningful it is? What is interesting is that, the quality of academics also started improving when we started allowing children to pursue their interests for part of the time - taking care of poultry, goats, cows, gardening and to pursue a variety of folk dances etc.

In all this, we stuck to the basic idea that schools are places for children to grow without losing their childhood. Whatever we do, should not come in the way of children enjoying their childhood. Generally people misunderstand this. Even during their board exams, children like to play and everyday they have play time. What they are interested in is - enjoying their childhood. It is not just the fun but it is also pursuing seriously various arts, craft activities, music ... that are close to their tradition that they identify with. What we are giving is nothing but an opportunity to pursue such interests, we are not teaching any of these. Many a times, in case of local or traditional arts, crafts, agriculture etc. we don't know anything. All we do is, to provide them the space and time for these activities.

C A: What is the approach of this school or that of the management towards conventional school subjects? Have they examined the usefulness of them or are they just being taught because the government says that they have to be taught.

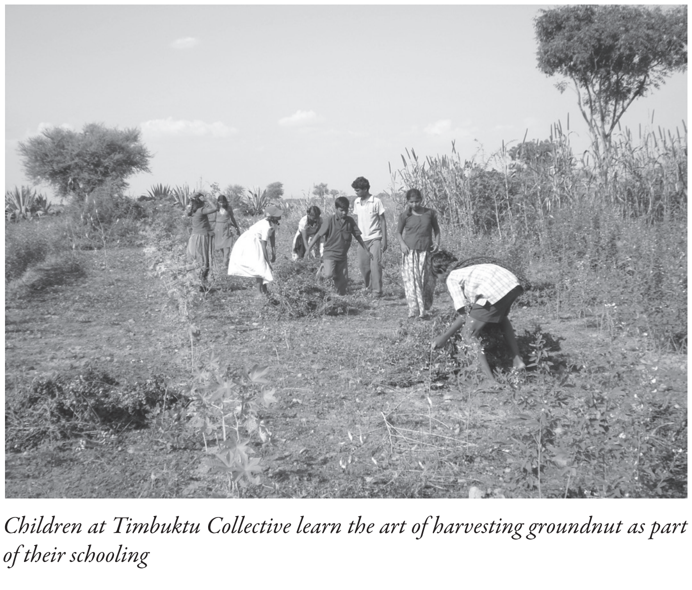
U S R: Basically it is a middle path. The aspirations of parents have also to be addressed. At the end of 4-5 years that the children spend with us, parents want their children to get some certificates. Hence, we prepare children for the board exam. Interestingly, they are doing better than main stream school children.

We don't take children into our school on the basis of merit. Actually children come to our school from very difficult backgrounds. Most of them come to us already branded as failures, as slow learners and as dull heads. Very early we had decided that our focus would be children neglected by the mainstream, neglected by their own families. We don't call them orphans but most of them are in the care of old grandparents or uncles who themselves are very poor. In some cases very irresponsible too. They treat these children especially girls just as sources of income or an extra pair of working hands. We have to engage constantly with their families, telling them that it is not good to treat children with gender bias, to just allow them to come to our school and spend 2-3 three year with us. One thing they do appreciate is that, even if children do not pick up academics they will surely pick up some other useful skills. On that rationale alone, most agree to send their children to us.

Because of the methodology used in academics, it is very easy to learn basic subjects like mathematics. The teachers are quite capable of handling basic classes. Within one or two years children start doing very well, better than any child in their villages. Once a child starts doing well in basic reading, writing and arithmetic, the aspiration of the parents goes higher. Then they start saying that their child has to do well in 10th standard. That is one reason we don't want to drop physics, chemistry etc. in academics. Also, some are very good in math, physics etc. We have now come to a very comfortable situation in the school. It is actually adequate if we can spend half a day on academic study, with a decent quality of education. Only children appearing for the board exam are required to take one or two extra classes in the afternoon. Otherwise, as a matter of routine, our system is, 'up to lunch time academic subjects'. Post lunch is dedicated solely to arts, crafts, gardening, games etc. At the same time, we don't compromise on the quality. Infact, our children get very good quality education in academics

C A: Are all these schools recognized schools? What is the programme like?

U S R: We didn't go for recognition. If we don't have recognition we don't have problem of inspections. There are some parents who ask for recognition. Till now we have maintained that in spite of no recognition one can go into main stream very easily. Our first batch students are in MA, MCA, MBA etc... Those who are able to cope with the mainstream and who have the aspiration are doing very well. They take it up very positively. Many of our past students are doing well, comfortably and honorably.



Children at Timbuktu Collective learn the art of harvesting groundnut as part of their schooling

Just two days ago we had a visitor. When the visitors queried as to what the pupils would like to do, one of the students said he would study up to 10th standard and would be a folk singer since he was very good in singing. The other said he would be a folk dance master. Many students mentioned they would become farmers, tailors etc. Only 2-3 students said they would become doctors, engineers etc. The visitor was very upset. He was angry with us as though we were spoiling the children. He had heard about this alternative school and expected all of our children should have great aspirations like becoming engineers and doctors. I told him that farmers, folk dance teachers were as good as MBAs and doctors. Of course like those of every child, our children's interests also keep changing. The school tries to provide them necessary opportunities, recognizes and promotes their interests and strengths. We are not forcing everybody to study only mathematics as various opportunities are there at their disposal and they fully enjoy what they learn.

The Timbaktu Collective's learning programme was initiated in November, 1992, in the shape of a non-formal learning centre called Prakruthi Badi (Nature School) at Chennekothapalli. Today we run 3 day schools (Prakruthi Badi, Shyapuram Badi, and Venella Badi), one evening school at Chinnapeta called Chinna Badi and one residential school (Timbaktu Badi) at Timbaktu. The children's resource centre at Chennekothapalli is open to any child from in and around the village. Prakruthi Badi remains the central education centre with advanced classes up to the equivalent of 10th standard.

C A: If somebody likes mathematics can he develop in that area.

U S R: Fortunately we have created good resources. We have a library with 7000 books starting from picture books to computer books. We also have good computer facility and internet. We have teachers who can teach well. So learning mathematics is not a big problem. Our efforts are in making this learning as natural as it happens in agriculture.

This idea came from agriculture, how naturally they learn agriculture. The same thing happens with computer. If a teacher is creative, it can happen in mathematics also. If the school gives equal respect for all areas of interest; makes available enough time, space and resources learning any subject is very easy. The key things are access to resources, availability of time and space.

In many other institutes and schools there is such an aura around brighter children. But over here it is different. Over here, if one child is good at mathematics, the other may be good in other things. There is time and space available for all things. We do not have extracurricular activities in our school. Singing, dancing, games and gardening are all part of curriculum. There is equal importance for academic as well as arts and crafts.

We have also told the teachers to learn everything like the children do and achieve what they want. So, many of them get a lot of inspiration to pursue various interests. Otherwise one has to stay as a one dimensional personality. It is not that all teachers really approve of our way of functioning. Some of them feel we are not focusing much on the mainstream results. They strongly feel that we can give more time to academics and the children would do very well. Their self esteem in the community will increase. We say not to push the children too much. We will have some middle path. If we can put in creative ideas without all the mugging, our children would be able to do very well in the board exams. We can also get good mainstream results. But the visibility comes only from few children. Children who have failed in the mainstream will not be looked at. But they are people who may are very good in many important things. They may be good in farming, singing and dancing. It is a sad thing to see so many good students are failed.

It is important to keep some time and space for children's interest in land animals, for agriculture to gain respectability, for traditional arts crafts and skills to get respectability. We want these things to get a respectable position in the minds of the people. We think doing well in the mainstream is very simple, it is just a matter of following certain directions – and one can do very well. On the other hand what children do here is way beyond following certain instructions and directions – they create their learning paths.

Contact Details:

U. Subba Raju, Timbaktu Collective, Post Chennekothapalli, District Anantapur – 515 101, Andhra Pradesh. Ph.:08559 240634 (Children's Centre), Cell: 9885580545, Email: u_subbaraju@yahoo.com

INDIVIDUALS AND INSTITUTIONS EXPLORING FARM AND NATURAL RESOURCES BASED LEARNING

1) Raghu Babu, 137- B, Block 8, Janapriya Apts, Miyapur, Hyderabad – 500 050, Andhra Pradesh. Cell: 09848092338

2) Shivaji Kagnikar: Parivartan, At Kattanbhavi, Post Bambarga, Taluka Belgaum, Karnataka. Ph.: 0831 2254109, 2554069 (pp)

3) Uttarakhand Seva Nidhi, Paryavaran Shiksha Sansthan, Jakhan Devi, Almora – 263 601, Uttarakhand. Ph.: 05962 234430.

4) Laxmi Ashram, P. O. Kausani, district Almora, Uttarakhand - 263639. Ph.: 05962 2580003, 258013.

5) Timbaktu Collective, Andhra Pradesh. (Featured in Andhra Pradesh chapter)

6) Deccan Development Society, Andhra Pradesh. (Featured in Andhra Pradesh chapter)

7) Puvidham, Andhra Pradesh. (Featured in Andhra Pradesh chapter)

(Source: Taleemnet)

Gopalkrishnan and Vijaylaksmi

SARANG SCHOOL AND FARM

Agali-Chittoor PO, Palakkad 678 581, Kerala. Ph.: 04924 209038, Cell: 09446239429, Email: saranghills@gmail.com, Web: www.saranghills.org

Contact persons: Gopalakrishnan, Vijayalakshmi, Gautham and Anuradha

Sarang is an alternative school in which life based subjects are learned naturally. Natural farming, soil and water conservation are subjects in its wide curriculum besides rural technology, politics and art forms. It was established at its present location in 1983 and now has an area of 12 acres. The school was once managed by seven teachers and it catered to 50 students.

At present the school runs with 13 children including the two girl children (Kannaki, 14 and Unniyarcha, 12) of Sarang family. Classes for Kalarippayattu (traditional martial art form of Kerala), Yoga, Classical Dance, Music and related subjects are not available in Attappady (where Sarang is located). Hence Sarang has rented a house in Chalakkudy, near Trichur and the children go to different masters for studying different art forms. One of the students' family looks after the farm at Attappady. This program was started in 2006 and is expected to go on until 2009. The present batch is being trained to become teachers at Sarang.

Farming practices: In the initial years the land was poor. Gopalakrishnan and Vijayalakshmi, though both from farming families, did not have any knowledge of alternative farming and neither the guidance. At first, they mulched the soil with the local materials available and sowed a variety of gram and grain – without ploughing. The gram sprouted but not the grain. Experimenting in this manner they learnt that mulching was essential as it retains moisture and by creating dampness and darkness, makes the soil hospitable to soil organisms. After mulching for two to three years the surface soil became loose and rich, now yielding grain when sown. Mulching with straw brought from outside was more effective than with local materials but this was given up due to extra transport costs.

In the first year, the surface soil increased in depth by one and a half inches. By the third year, the soil was black, fertile with a depth of half a foot and was ready even for the cultivation of paddy (rainfed). From then onwards, pulses and grains needed for the members at Sarang were produced on the farm itself.

Now crops are cultivated twice a year (May to September and September to October) – a mixture of pulses, grains, (black gram, green gram, cowpea, cholam, samai, etc.) tubers, vegetables, fruits, spices and cotton (tree cotton variety from Maharashtra, that yields for a minimum of 20 years) as per the needs of the household. No ploughing is done. The seeds are sown by disturbing the mulch material with a fork like tool. After placing the seed, it is once again covered with mulch. No irrigation is done. Almost all the rain water is absorbed by the spongy soil and the mulch, and run-off is totally prevented. No weeding is done as the mulch doesn't allow the weeds to grow. Mulching is done in March and in the summer the land is left fallow. No additional manure is given. No separate pest and disease control measures are taken. As such, farming in this way doesn't involve much work. But at Sarang, the grain yield is 800 kg per acre while in the neighbouring fields (i.e. those ploughed and weeded) it is only 200 to 400 kg per acre.

Sarang members decided to live on crops which are suitable to their land rather than cultivate crops which suit their taste. Fruit trees on the farm include banana, guava, gooseberry, etc. Turmeric is grown around the plot with other crops. A small plot of paddy is grown to demonstrate that even paddy can be grown by natural farming on a hill top.

Lemon, gooseberry bring in a moderate income.

After acquiring the barren land, the watershed area was left uninterrupted and protected from outside disturbance. Over the years, it has developed into a healthy natural forest and acts as the core catchment area of the watershed. Along with this the gullies were plugged by growing bamboo, and the ravines were blocked by constructing mud walls with bamboo supports. Check dams were constructed wherever needed. Because of soil and forest regeneration, water is now available all year round. The rain water that falls on the houses is collected in two ferro-cement tanks and used in the household. Percolation ponds are dug throughout the farm and forest wherever needed so that no rain water is wasted. Labour needs of the farm are met by Sarang members and labourers hired from outside.

Sarang has invested time and effort in natural farming because of its firm conviction that farmers should not depend on external support and villages should be self reliant and free from urban domination.

Sarang is a living educational experiment in self sufficiency. (Source: Communication with OIP)

The Sarang Travelling School

TALEEMNET

G-8, St. Britto's Apts., Feira Alta, Mapusa 403 507, Goa. Ph.: 0832 2256479, Fax: 2263305, Email: taleemnet@gmail.com, Web: www.multiworld.org/taleemnet.html.

Taleemnet provides a much-needed platform for parents and educators who realize that while keeping kids out of school may initially seem risky, it may bring great benefits in the long run.

The formal education system represented in millions of schools and school-like institutions all over the planet is the single biggest catchment from which minds are recruited, homogenised and harvested by the commanders of westernisation and globalisation today.

While globalisation has provoked rebellion from millions, education has remained for some reason outside of the raging debates and street battles.

Taleemnet has been founded to: document homeschool experiences and experiments in natural learning from across the world; help promote learning opportunities for those who opt out of school; create alternative routes to existing certification schemes for those who say or feel they need them for any purpose including employment; help in the reform of existing schools, to mitigate at first their worst aspects, particularly those features that make schools like prisons; disseminate literature relating to the ill effects of schools and schooling.

The Taleemnet website is exclusively for reporting on the discussions and experiments on learning outside school walls or outside the framework of 'factory schooling'. Taleemnet is the first major network dedicated exclusively to deschooling or unschooling experiments in Asia, Africa and South America. It is determined to reverse the process of colonial education which still persists in our countries despite political independence. It links to significant home schooling and free learning movements from across India and elsewhere.

(Source: Taleemnet)

NATURAL FARMING INSTITUTE

G-8, St. Britto's Apts., Feira Alta, Mapusa 403 507, Goa. Ph.: 0832 2256479, Fax: 2263305, Web: www.multiworld.org/nfi.html

While others of her age are locked in school, Mayuri accompanies DDS staff and workers around the country, learning skills of interest to her

The Natural Farming Institute is an Internet-based (virtual) centre for the promotion of organic farming in India. It proposes to look closely into every aspect of organic farming, particularly knowledge of the soils and plants, maintenance of an on-line library of materials for organic farmers, directories of websites, and training courses for farmers who wish to convert to organic methods.

A major focus of the Institute is the children of organic farmers whose future on the land is generally sabotaged by the existing educational system which has been designed exclusively for persons from non-rural, non-agricultural backgrounds.

NFI has initiated a workgroup of organic farmers who have themselves kept their children out of school or sent them to schools that are sympathetic to the cause of real learning. A draft curriculum of studies designed by them is available on the website.

The aim is to offer a curriculum that will not only generate intense love among the children for the land and agriculture, but also enable them to deal successfully with the modern world and its demands including certification at the high school and graduate levels, when required or desired by the student concerned.

Succinctly put, it hopes to assist farmer parents in raising children in the art of maintaining living soils and instilling in them the sense of worth from an endearing partnership with the land.

NFI is a constituent of the Organic Farming Association of India. It operates from the central secretariat office of OFAI in Goa.

(Source:NFI)

THE LEARNING NETWORK-INDIA

www.learningnet-india.org

The learning network is run by a group of volunteers who endeavour to support varied education related activities and schools imparting meaningful education. The website is a good resource profiling many learning initiatives across India. It is an ideal place to start if one is looking for an appropriate school or centre for children. Most of the centers profiled are located in rural areas in India.

(Source: Taleemnet)

ALTERNATIVE EDUCATION IN INDIA

www.alternativeeducationindia.net

Alternative Education in India is a virtual resource centre for parents interested in home schooling their children. An online discussion group has many a home schooling parents' tearing their hair over how best to go about what they took on when they made the decision to say no to school. It is an excellent support group moderated by persons who themselves have home schooled their children. The site is a rich source for articles on home-schooling, profiles of alternative schools, related links etc.

(Source: Taleemnet)

Maya Goel, daughter of Dr Sujata and Anurag Goel, organic farmers, learns to pollinate vanilla plants

Children of Krac-a-dawna organic farm and elements never went to school.

A few educational endeavours are profiled below to give the reader an idea of the kind of selection available to meet the needs of farmers' children

SUMAVANAM SCHOOL

Cheegalabailu, Madanapalli, District Chittoor, 517 325,
Andhra Pradesh. Cell: 09247432858

Contact: Usha and T.M. Narasimhan

Sumavanam School is inspired by David Horsburgh and the mathematician P.K. Srinivasan. Usha and T.M. Narasimhan is a teacher couple who co-founded the school in 1982. A small group of farmer and village children learn here in an endearing environment. Children are taught through an integrated approach in Telegu and English. Older children when ready and if desirous of taking their certification examination are assisted in preparing for class X examinations of the National Institute of Open Schooling.

(Source: Taleemnet)

VIDYODAYA

P.B. No. 28, Gudalur 643 212, The Nilgiris, Tamil Nadu.
Ph.: 04262 261 927, 261026 (R), 261504 (O), Email: vbvt@sancharnet.in, Web: www.adivasi.net

Vidyodaya school was started by Rama and Ramdas for their own children and the children of their friends and colleagues in Gudalur. Over time the school has evolved into a learning space for the tribal children of the surrounding villages. The school and Trust have been handed over to the tribals ,who run the school and other extension learning centres in the tribal hamlets of Gudalur. Rama and Ramdas have helped many other interested educators to set up rural learning spaces in Maharashtra and Karnataka. These centers mostly cater to the farming and farm labour communities. Vidyodaya today attracts many national and international interns who apprentice with them for training to be educators.

VIKASANA

Doddakalasandra P.O, Bangalore – 560 062, Karnataka. Cell: 09449347042, Ph.: 28435356, Email: malavikasana@yahoo.co.in

M.C. Malathi was trained by David Horsburgh and started the rural learning centre, Vikasana over three decades ago in 1977. Vikasana is more than a learning centre for the children of the area. It is more a second home where little ones are groomed to be wholesome individuals. Learning from nature, learning by doing and learning from one another is all part of a day spent at Vikasana. Children of Vikasana are excellent builders from natural material and excellent naturalists. The children of Vikasana take the class X examination from the National Institute of Open School if and when they so desire.

(Source: Taleemnet)

RAVI ALGUNTI

Akshara, 5-357 B, Appa Rao Thota, Madanapalli, Chittoor
District - 517 325, Andhra Pradesh Ph.: 08571-228197

Ravi Algunti runs a learning centre and a mobile library for rural children in Madanapalli in Chittoor district of Andhra Pradesh. He splits his time between 15 Govt. schools in the area taking his expertise in language, math and environment science to the children of Madanapalii Mandal.

(Source: Taleemnet)

DEENABANDHU

Deenabandhu Trust, Behind Forest Nursery, P.W.D.Colony,
Chamarajanagara – 571 313, Karnataka. Ph.: 08226 226007

This school in Chamarajanagara is run by lay individuals inspired by the philosophy and teachings of Shri Ramakrishna Paramahaunsa and Vivekananda. The school has a residential facility for rural children with a separate home for girls. It is a place of high energy and continuous learning with inputs coming from many volunteer individuals who give of their time and energies for the activities of the school. Dinabandu provides a stress free homely atmosphere and high quality education free of charge for children of poor farmers.

(Source: Taleemnet)

VIVEKANANDA GIRIJANA KENDRA

Yelandur Taluk, Yelandur, Chamrajnagar District - 571 441,
Karnataka. Ph.: 8226 44025

Raghu Babu: The Joy of Learning in the Fields

What are the important tempting factors which are encouraging us to think, plan and practice farm-based education?

Science teaching through farm work – one example of farm-based study – is offered here as an impetus to further this discussion.

Speaking from experience, it was really beautiful to see children working in the school farm with their little hands. Some children would make a joke about every one's work. Boys tried to tease girls. Girls hesitate, shout at the boys and complain to the teacher. There were a few silent working children, they just smile, murmur and in a low voice suggest they not to be teased. There is a general feeling of benevolence and enjoyment.

Children worked on the farm every day for a couple of hours and gleaned insights into various subjects around this work. What they did on the farm provided many opportunities to explore the fun in learning through farm connections!

For the teacher, it was a great challenge to relate manual and farm work to academic subject categories. We tried our best to explore all possible ways of making learning possible through farm-based activities instead of using the usually bland teacher centered lesson delivery.

In science teaching, one of the activities was interv iewing. Teachers prepared interview guidelines for different crops consisting of 10-15 questions with space provided for farmer responses. In 1988, in our village Pallipadu, teachers used to patiently prepare a hand written interview guideline for every child. But at Pacha Saale, in 1998, there was a xerox machine at the DDS office, Pastapur, so it was easy on the teacher. We divided students into pairs and sent them to the fields to conduct interviews with farmers. Narayana of Srujana School was a rough and tough boy, not interested to join with others and also not a cooperative boy, so we allowed him to work alone.

Raghu Babu

Jyothi and Kavita were a pair. Both were shy and impatient. Both were walking on the small bunds in the field, trying to balance themselves, holding their questionnaires, talking, laughing… Teacher followed behind silently. Behind him was Narayana. He was singing poems very loudly in a non-rhythmic and non-melodious voice. Teacher asked him to stop singing. He was hurt. Teacher tried to explain, 'Look, we are going for a purpose. We are trying to gather some information from the farmers. They may answer or may not answer our queries. Some times, they may hesitate or get angry, we don't know. We should be careful. We have to request, tell them that we came to learn a few things from them, otherwise how will they cooperate? If you sing like this, what will they make of this exercise and what will they think of you, of me – your teacher and the school?' Narayana stopped singing. Jyothi and Kavita turned into the brinjal field, Narayana continued into the sugarcane fields. Teacher followed the girls.

Jyothi and Kavita met a farm hand who was weeding the brinjal crop, and introduced themselves and explained their task, but the person did not respond. The girls were a little frightened and looked at each other. Teacher refused to help. Again Jyothi asked him to answers their questions. Without stopping his work, he roared, 'If I sat with you to chit chat, who will do my work? Go on ask questions ….' Then Jyothi started questioning him while Kavita documented his answers. The interview that started out with fear and hesitation ended with the girls getting all information regarding the crop.

All children visited different farms, met different farmers and collected information on paddy, cotton, maize, lady's fingers etc. A few farmers did not cooperate, some gave very brief, but concise answers; while others responded very well giving the children much additional information. There were children like Kristayya, who did not visit any farm, sat under a tree near his house and filled the questionnaire without interviewing any farmer.

The children thoroughly enjoyed this exercise. Leaving the walls of the classrooms behind and going out of the school, freeing themselves, filling their lungs with fresh air, observing nature, roads of the village, explaining to the people about their task all provided an opportunity to develop the skill of interviewing. This exercise provided an excellent outlet for their energy. They helped themselves to corn, millet, red gram, fruits and sugarcane right off the fields. Some, like Narayana, simply cut the sugarcane and started to eat without permission from the farmers and were pulled up for it by the teacher, farmer or their peers. After investigations, children returned to school with wide, excited eyes, reporting on their explorations.

My observations have been that by educating themselves in the mainstream schools rural children neither develop their farming skills nor are fit for the urban job market. Moreover those who do get a job fail to cooperate with their parents in their traditional family occupations. Also having gone to school, there is a general tendency of hesitation to do agricultural work.

There is dissent among serious thinkers and educators about the relevance of present day 'one-size-fits-all' kind of education in particular context to rural children There is also a serious thought amongst them to link the entire school education with agriculture/natural farming/permaculture etc.

Globalization and capitalistic value systems are alienating us from nature. All economic activities are carried out at a high cost to nature and environment. Our sciences and technologies are preparing us for a war on nature! We are keeping ourselves away from developing traits of compassion, goodwill, harmony and trust in each other. Day by day concern for all beings which coexist with us is steadily on the decline.

Before considering implementing farm-based education, there is a need to clarify whether our interest is to fight against socioeconomic disparities of rural students whose connect is with agricultural practices or is the emphasis on simply living according to the rules of nature, working with nature – both at individual and community levels.

Contact: Raghu Babu, 137b, 8th Block, Janapriya Apts., Miyapur, Hyderabad 500049. Cell: 9246358795

E-mail: babu.rg@rediffmail.com

(Source: e-bulletin by Raghu Babu)

Vivekananda Girijana Kendra is within the Biligiri Rangana Betta Wild Life Sanctuary. It caters to the education and vocational skill training of the children of the Soliga tribals within the Sanctuary. It provides a residential facility for students and is an excellent centre for integrated learning. Its Natural Science curriculum is based on the biodiversity of the sanctuary, its relationship with the life of the Soligas within the forests.

(Source: Taleemnet)

DIVYA DEEPA

Kenchalagudu village, Near Salhundi, Jayapura hobli, Rayanakere post, Mysore – 570 008, Karnataka Email: divyadeepa.trust@gmail.com

Divya Deepa is a small residential learning centre for children of farmer families and for the children of casual labour. It essentially caters to the needs of the unfortunate who for reasons of poverty, abuse etc. are forced to keep their children away from them. Divya Deepa has won the hearts of innumerable youth from professional colleges in Mysore and other nearby cities. The youth give of their time, energy and resources to the cause of these children. The centre is a space of high positive energy and well being. The city students are doing an excellent job of volunteering their time and talents for these children. The curriculum is largely unstructured and need-based. (Source: Taleemnet)

PRAGATI SHIKSHAN SANSTHAN

Ring Road, Near Adhikargrah, Phaltan –413 523, Maharashtra. Ph.: 02166 – 223041 (Off), 02166 – 220586, 222327, Email: maxineberntsen@rediffmail.com, pssphl@sancharnet.in, manjunimbkar@rediffmail.com

Dr. Maxine Brensten is a pioneer educator who has spent her life time in understanding the educational needs and aspiration of rural India. The Marathi medium school started by her at Phaltan is an excellent learning centre for children. Children here grow up with the sense of self worth and a deep respect for their community and for hard work. The day school offers the matriculation examination of the Maharashtra Board.

(Source: Taleemnet)

ANAND NIKETAN

Nai Talim Area, Sewagram Post, Dist. Wardha (M.S), Pin-442 102, Maharashtra. Ph.: 240168 (Res), Fax: 244005, Email: sushama_sharma@rediffmail.com

The Nai Talim School in Wardha is run by Sushma Sharma on the lines of Gandhi's education philosophy of integrated rural farm based study – Nai Talim. Local children from Wardha attend this school.

(Source: Taleemnet)

SITA SCHOOL

Vishram,Silvepura,Bangalore North – 560 090, Karnataka, Ph.: 080 28466274 Email: jane_sahi@hotmail.com, janehelensahi@gmail.com

Jane Sahi is a pioneer educator who started Sita School in the outskirts of Bangalore over two decades ago. Children of farmers and wage labourers come from nearby extension areas to learn here. The medium of instruction is Kannada and English. When ready, children are prepared for the open school examination.

Sita School has been a place of inspiration to a whole generation of educators in India today who have gone on to start their own centers of education in Rural India.

(Source: Taleemnet)

KANAVU

Nadavayal P.O, Wayanad – 670 721, Kerala. Ph.: 04936 –211114 / 211113

Kanavu is a learning commune for the tribal children of Wayanad. Children here live, farm and learn. Music theatre and oral traditions are given prime emphasis. The children of Kanavu are excellent farmers, potters, builders, masons, musicians, photographers, dramatists, choreographers, experts in the traditional kalariapattu marshal art and have a deep understanding of local ecology, biodiversity and alternate medicine. Shirley and K.J. Baby started Kanavu almost two decades ago. The Trust and the commune have now been handed over to the senior 'students' to be run independently. K.J. Baby and Shirley are still centrally involved as mentors.

(Source: Taleemnet)

THULIR

Anuradha, Krishna, Thulir, Sittilingi Village, Theerthamalai PO, Dharmapuri District – 636 906, Tamil Nadu. Ph.: 04346-258611

The Thulir education resource centre caters to the needs of rural children. The unique aspect of the centre is that the children can come to the school at any time of the day. This is so because many rural children as a matter of routine contribute to running the home and farm. Thulir attempts to use the environment around as a focal point for all learning. It assists children who wish to take an exam prepare for it.

(Source: Taleemnet)

KUDUMBAM

No. 17, Highways Colony, Subramanyapuram, Trichy 620 020, Tamil Nadu. Ph: 0431-2331879, 2331842, 2332175, Fax: 0431-2332175, Email: kudumbamtry@eth.net,

Contact: Mr. Oswald Quintal

For details of training programmes offered refer Tamil Nadu chapter.

(Source: OIP)

ALI MANIKFAN

Do Nothing Farm, Madapuram, Vallioor, Tirunelveli Katta Bomman District, Tamil Nadu.

Ali Manikfan is a multi-faceted, multi-talented personality. Interacting with him on farming and alternative technologies would be extremely beneficial to persons interested in the pursuit of deeper understanding of sustainable practices.

For details refer Tamil Nadu chapter.

(Source: Taleemnet)

RURAL CENTRES OF THE KRISHNAMURTY FOUNDATION

Most Krishnamurty schools are set within a large campus outside city limits. These schools provide for learner centred education. Many of these schools also have a rural education centre attached to them providing for a journey of enquiry based learning. The curriculum of study to a large extent is rooted in the local rural reality. The details of location and activities of each centre are available on the website: www.kinfonet.org

(Source: Taleemnet)

THE CENTRE FOR LEARNING, ORGANIC AGRICULTURE AND APPROPRIATE TECHNOLOGY (CLOAAT)

The Principal, CLOAAT, P.O.Box 57, Kodaikanal 624101, Tamil Nadu. Ph.: 04542 230297/230393/230487, E-mail: cloaat@yahoo.com, Web: www.cloaat.com www.sholaicloaat.org

(Contact: Brian Jenkins, Principal)

The Mature Student Programme

In a beautiful sylvan valley, 18 kilometres from Kodaikanal, in southern India, the Centre for Learning Organic Agriculture and Appropriate Technology (CLOAAT) offers a 10 to 20 month Mature Student Programme to young people in the age range of 18 to 28 years.

Students are expected to follow creative, supervised self-study with a practical hands-on orientation in any or a combination of these subjects:

* Organic Bio-dynamic farming and Permaculture.

* Environmental Management

* Learning and improving your English.

* English Literature.

* Food and Nutrition

** The Art of Teaching

***Appropriate Technologies (Solar, Micro-hydro, biogas etc.)

+ Geographical Information Systems to develop Sustainable Lifestyles in Rural India.

World Affairs

For students desirous of certification there is a provision to take:

*Advanced Level or International GCSE examinations with the University of Cambridge International Examinations (CIE). **Cambridge International Diploma for Teachers and Trainers (CIDforTT).

*** National Institute for Open Schooling (NIOS), New Delhi examinations for Solar Energy Technician, Biogas Technician and Carpentry.

+ In collaboration with Natural Resource Data Management Systems, The Ministry of Science and Technology, New Delhi.

The Centre covers more than a hundred acres of mostly forested land and encompasses an organic farm certified with Control Union, The Netherlands.

CLOAAT has no connection to the Tamil Nadu Electricity Grid, all its energy is derived from nature: solar, micro-hydro, biogas etc. The various appropriate technologies at the Centre are state-of-the-art producing just 109 watts per person per day of highly efficient and eco-friendly electric power. This is used for running the computers, the lighting, kitchen equipment, workshop machinery, TVs, satellite receivers etc. etc. being used by the staff and students.

For its eco-friendly and sustainable usage of water, energy and air, for its recycling of waste and bio-diverse flora and fauna, CLOAAT received The Model Green School Award from the Centre for Science in the Environment, New Delhi in 2007.

Currently the Centre is under assessment by BalanceC02 of Canada for its carbon dioxide absorption potential.

CLOAAT is not a commercial organisation, but provides learning space for young minds to explore and discover their vocations in life. Though the focus is not on examinations, the Cambridge International Examinations are designed to bring out creativity and thoughtful responses, hence we advise students when appropriate, to take up these exams.

The NIOS examinations are unique in the world and based on 70 per cent practical work. Hence they give a real indication of the student's actual knowledge of the subjects.

Another option is that students enroll with correspondence Bachelor and Master degree courses with Indian Universities. As a result, the mature students can pursue their real, passionate interests at CLOAAT, at the same time work towards a recognised degree.

CLOOAT does not offer distance learning or individual courses, however they are open to taking students on short term programmes to explore areas of individual interest related to courses on offer.

CLOOAT has an abiding relationship with Brockwood Park J Krishnamurti Educational Centre, UK, such that some of the students have taught there or have gone to join their Mature Student Programme.

Farm produce including organically grown coffee, black pepper and cheese are available for sale under the name: Sunbird Natural Products.

For further details and application forms check the website or contact Principal.

(Source: Communication with OIP)

BIODYNAMIC FARMING TRAINING COURSE BDAI Secretariat : Pethuparai, Perumalmalai PO, Kodaikanal 624 104, Tamil Nadu. Cell: 09360390873, Email: bdaind@gmail.com

BDAI offers a 6 day basic course in Biodynamic Farming. Topics covered are:

The crisis in modern agriculture and the increasing relevance of biodynamic farming

Biodynamic Preparations 500 to 501. Theory and Practice

Biodynamic preparations 502, 503, 504, 505, 506, 507

Practicals: Making of Biodynamic compost, Cow Pat Pit manure (CPP), Liquid Manure.

The significance of the moon and planetary rhythms in agriculture

Soil science, soil fertility, plant pests & management of disease.

Weed control

Animal husbandry in BD farming

How to convert a farm to biodynamic agriculture

Contact for registration:

BDAI Secretariat: Ichor Estate, Petuparai, Perumalmalai, Kodaikanal 624104

bdaind@gmail.com, jakesjayakaran@gmail.com

(Source: Leaflet)

POSTGRADUATE CERTIFICATE IN ORGANIC FARMING (PGCOF)

The Indira Gandhi National Open University (IGNOU) in collaboration with the Agricultural and Processed Food Products Export Development Authority (APEDA) of the Ministry of Commerce, Govt. of India, has developed a 6-month Certificate Course in Organic Farming.

The course is open to all above the age of 18 with a basic qualification of 10+2 or Bachelor Preparatory Programme (BPP) from IGNOU. A candidate has the flexibility to complete the course in two years time. The course content covers: Introduction to Organic Farming, Organic Production System, Inspection and Certification of Organic Produce and Economics and Marketing of Organic Produce. The course fee is Rs.3,000.

The course is delivered in the distance mode with study centers at State Agricultural Universities, Krishi Vigyan Kendras (KVKs), ICAR Institutes, NGOs and other organizations where sufficient infrastructure is available.

Details are available at IGNOU Regional Centres or can be obtained online along with admission procedures etc. from:

Indira Gandhi National Open University, Maidan Garhi,
New Delhi-110068, http://www.ignou.ac.in

ORGANIC EDUCATION

Post Graduate Diploma in Organic Agriculture Management PGDOAM

M.R. Morarka – GDC Rural Research Foundation, Web: www.pgdoam.com

Morarka Foundation jointly with Maharana Pratap University of Agriculture and Technology, Udaipur offers a 12 month comprehensive diploma programme. The curriculum is divided equally into class and field experience. The course trains candidates for Junior Management cadre positions in the organic farming sector

The classroom learning includes courses on:

Organic Farming and practices

Organic Standards and Certifications

Engineering & Technologies in Organic Agriculture

Agri Biotechnology

Agriculture Product Marketing

Agri-entrepreneurship and Management

Supply Chain Management and Storage

Food Quality Management

Communication Skills - Written and Spoken

The field - onsite learning enables a candidate to get complete exposure to real life agribusiness environment.

Course commences in January each year.

Course fee: Rs. 70,000/-

Contact: Course Coordinator – PGDOAM

M.R. Morarka – GDC Rural Research Foundation, Vatika Road, Off Tonk Road, Jaipur, Telefax: 0141 2771100, 2771101, Cell: 09829056650, Email: info@morarkango.com, Web: www.morarkango.com, www.pgdoam.com

(Source: Website)

BASIL

Bhaktivedanta Academy for Sustainable Integrated Living

Eco-Agri Research Foundation, # 142, 4th Cross, 4th Main, Bannimantap 'C' Layout, Mysore – 15, Karnataka. Ph: 0821 2491016, Email: info@basilacademy.in

Basil offers academic training in organic and biodynamic agriculture. It is the academic wing of ISKCON Bangalore's rural development programme of the Eco Agri Research Foundation. The course has been inspired by Swami Srila Prabhupada, world teacher on the science of simple living based on cow and land economy and high thinking based on spiritual growth.

It is based on the philosophy that, since food plays a vital role in building an individual, it is the responsibility of the farmer to provide society safe and nourishing food.

Basil offers integrated training in the following areas:

Training courses for farmers in organic and biodynamic farming systems

Training courses in documentation and internal control systems.

Basic course in safe food and health choices

Courses to introduce sustainable, holistic lifestyle, simple living and creative thinking for the corporate sector

Faculty:

Madhu Pandit Dasa – The Akshaya Patra Foundation

Jai Chaitanya Dasa – Eco Agri Research Foundation, Hare Krishna Nature Farm

Srilatha Madhusudan – Eco Agri Research Foundation

Peter Proctor – Biodynamic Outreach, New Zealand, India

Rachel Pomeroy – Biodynamic Agriculture and Astronomy

David Hogg – B.D.A.I. & Consultant

Kamini Sheth – Resource Advisor

Basil is located on the outskirts of Mahadevapura village, near Mysore city by the picturesque banks of river Cauveri, 18 kms from Mysore. Boarding and lodging facilities are provided for participants at the premises.

'Organic Lifestyle' is their magazine for organic farmers.

(Source: Brochure)

TAMIL NADU AGRICULTURAL UNIVERSITY, COIMBATORE

Offers a one year PG Diploma course in Organic Agriculture for the students of agriculture and provides information and services on related matters. Manure production, solid waste management and assessment of organic manure.

Contact: For all details on organic farming and the course.

Dr. P. Devasenapathy

Chief Agronomist (AICRP-CS), Department of Agronomy, Centre for Soil and Crop Mgt. Studies,

Tamil Nadu Agricultural University, Coimbatore – 3, Tamil Nadu. Ph.: 0422 6611246, Email: devasenapathy@tnau.ac.in

Contact: For details about the organic manure production, assessment etc

Dr. P. Udayasoorian

Professor & Head, Department of Environmental Sciences, Centre for Soil and Crop Mgt. Studies

Tamil Nadu Agricultural University, Coimbatore – 3, Tamil Nadu. Ph.: 0422 6611452, Email: environment@tnau.ac.in

Contact: For all other details

Dr. S. Natarajan

Director, Centre for Soil and Crop Management Studies, Tamil Nadu Agricultural University, Coimbatore - 641 003, Tamil Nadu. Ph: 0422 6611316, Email: directorscms@tnau.ac.in

(Source: Brochure)

SPECIAL COURSE IN SUSTAINABLE AGRICULTURE

College of Continuing and Non-formal Education (CCNFE)

Allahabad Agricultural Institute deemed University, Allahabad 211 007, Uttar Pradesh. Ph: 0532 2684305, Fax: 0532 2684306, Email: recruitment@ashaasia.org

Contact: Course Coordinator

CCNFE is one of the units of the Allahabad Agricultural Institute – Deemed University. It was established in 1975, and is an ecumenical institution promoting sustainable, organic-only agriculture in rural India and its neighbouring countries.

The course is designed to nurture rural leaders, both men and women, so they may better serve their communities by promoting sustainable, integrated organic farming, and appropriate agricultural development practices, particularly relevant to small-scale and marginalised farmers.

Eligibility: A minimum of class ten pass at school or equivalent ability; Age: 18-50 years ; Fee: Approx.. Rs. 5,000/-; Scholarship: available to deserving candidates.; Other relevant short courses also available.

(Source: Brochure)

AMITY INSTITUTE OF ORGANIC AGRICULTURE (AIOA), NOIDA.

Established in 2005, AIOA is offering an MBA in Agriculture and Food Business and an M.Sc in Organic Food Production and Certification at their campus in Noida. Both are full time two year post graduate courses related to Organic Agriculture. The curriculum indicates a high profile programme that is designed to provide candidates with the wherewithal of working with large scale organic agricultural practices, certification agencies, supply chains etc. The programme offers hands on training in organic practices combined with management techniques, computer literacy, options for learning foreign languages etc.

Details can be obtained from: Amity University Campus, Sector-125, Express Highway, NOIDA-201 303 (Adjoining New Delhi), Uttar Pradesh

Director General: 0120 4392157/ 58 (O), 0120 2512243 (R) Cell: 09818094119, Email: ksbains@akcgroup.com

Deputy Director: 0120 4392185, 0120 2510746 (R) Cell: 09810924708, Email: jnkaul@amity.edu

(Source: Website)

VIRTUAL UNIVERSITY FOR AGRICULTURAL TRADE (VUAT)

www.vuatkerala.org/static/eng/organicfarming

The Virtual University for Agricultural Trade (VUAT) is established by the Government of Kerala as a consortium of state and central agencies. It has been set up to provide a spectrum of services and inputs to support exports. This according to them is because Kerala grows many crops that benefit from export trade.

The virtual portal offers web-enabled short term training and certificate programmes in specialised areas. It also offers short courses in specific areas for farmers and officials of the Department of Agriculture. The thrust is towards providing better access to market and trade information.

(Source: Website)

Even if one were to go by the official figures of certified organic farms, the global graph production of crops through organic farming has been steadily ascending in the past decade. According to the latest IFOAM-FIBL data, at the end of 2007 there were 32.2 million hectares of certified organic farms worldwide.

According to FiBL, the 2007 figure has shot up by 1.5 million hectares when compared to the previous year's survey. At the level of planetary geographical regions, growth in terms of certified farms has been strongest in Latin America and Africa.

With its vast grazing lands, Australia continues to account for the largest certified organic surface area of 12 million hectares. Australia is followed by Argentina (2.8 million hectares), and Brazil (1.8 million hectares).The greatest share of the global organic surface area is in Oceania (37.6 percent), followed by Europe (24.1 percent) and Latin America (19.9 percent). In terms of certified land under organic management as a proportion of national agricultural area, the Alpine countries, such as Austria (13.4 percent) and Switzerland (11 percent) top the statistics. One must again remind oneself here, that these figures only represent produce certified as organic as per European Union standards. Naturally, the world's largest producer of organic food – India – does not figure upfront in these statistics.

This is a perception of organic farming that is decidedly Eurocentric and dependent on meeting exclusively industrial society needs. It may be pertinent to note that according to the *Organic Monitor*, the vast majority of certified organic products are being consumed in North America and Europe – both 'industrially advanced' continents accounting for a minor percentage of the global population.

It's time someone objected to food transported thousands of kilometres (food miles) in ships powered by diesel being labelled as 'organic'. Eschewing food grown without petrochemicals but inviting foods whose transport must be based on burning more of them and still claiming to be 'organic' is the height of hypocrisy indeed.

Thus the IFOAM-FiBL scenario has really very little to do with us in Asia or Africa. We are sick and tired of being compelled to see the world through European eyes.

It's time we tried to look at the matter differently.

CHAPTER TWELVE

Organic Asia

Organic Production: Who's the biggest of them all?

By Claude Alvares

Statistics always conceal more than they reveal. The data available on the extent of organic farming country-wise and world-wide produced by various authorities from IFOAM to APEDA not only reveal contradictions and absurdities, they have a 100% Eurocentric bias. They also reveal the continuing mental dependence of India's administration on concepts and categories designed for Europe's needs during colonial times.

P.V. Satheesh (see boxed accompanying article) has drawn serious attention to one of the greatest anomalies that afflict the worldwide data on organic production. He focuses on what is widely accepted now as 'default organic' production-which is left out completely by the certification system.

Using the category of 'default organic' is the only way of recognizing that large areas in India continue to function outside the morbid influence of green revolution practice and therefore do not use chemicals and pesticides. The term 'default' does not indicate whether this form of agriculture is voluntary or involuntary and whether the subsistence farmers, peasants and tribals concerned would also have used chemicals and pesticides as their preferred way of raising crops if the agricultural machinery and extension services had reached their areas.

It is also clear that a large number of people are simply not using chemicals because they are subsistence farmers who do not have access to income or credit for such purchases.

The green revolution technology also had its inbuilt limitations; it could only be utilized in areas that have access to irrigation facilities as soluble chemical fertilizers would be pointless in dry lands, deserts or drought-prone areas.

If this category of 'default' organic farmers is put together then a very large segment of the population – especially the tribal districts – would be growing food without chemicals and pesticides for the various reasons given above. The figures given by P.V. Satheesh deal mostly with millet production. In fact, the most recent data available from IFOAM indicates already that the largest number of 'certified' organic farmers can now be sourced to India. That is, without even including 'default' organic farmers in that figure.

This top status, however, is certainly not reflected in the data on total world organic production. Total organic production is restricted to certified organic production. The assumption is, if the commodity is not certified for purposes of export, it is not organic, which is an entirely unacceptable notion. There is so far no calculation of what is actually organically grown within India crop-wise. We only have figures of several major commodities and crops which do not segregate organically grown from conventionally grown.

Here again the issue of labels is very interesting: organic farming is still the conventional means of farming in India, whereas chemical farming is the conventional means of growing food in Europe. So giving 'green revolution' agriculture in India the title of 'conventional farming' is again a major error or perception.

Thus if one takes the large number of organically grow commodities which are used for the consumption of the local and national community, India will continue to be the biggest organic farming country in the world even on those terms.

For example, if one takes wild produce including minor forest produce into consideration, mahua flowers, wild honey, mushrooms, (from forest areas) it is obvious that the quantity of certified organic wild produce is an extremely small percentage of the total available, generated and consumed edible produce from forest areas. All this is production 'by nature' (not 'by default') and therefore organic.

If one moves over from the area of wild production to 'domesticated crop' production, here again we come across huge production of food and fruit which is not included in the organic production figures. Take just two or three examples. One is the area of millet production, especially that grown under kumeri or slash and burn agriculture. One can include also fruits like the jackfruit, jamun, ber and a host of other very edible commodities that one gets but which are purely domesticated but which are never given either chemical fertilizers or pesticides. In fact, mango trees that produce between 600-1000 mangoes and in height exceed 2-3 storey buildings are not capable of being sprayed with pesticides except by airplanes which is something this country cannot afford in any circumstance. This *Sourcebook* highlights the case of Raju Yadav who has a single ancient tree that in one year produced a record number of 23,456 mangoes.

Or take the case of the jackfruit. This great fruit grows naturally in the entire region blessed by monsoon rain. In Kerala alone, it is estimated every year jackfruit trees provide some 350 million fruits. One estimate has put the value of this at Rs.214 crore. I reiterate we are discussing only one fruit in one State. (The total export of organic produce from India for 2007-08 came to Rs.498 crores.)

That is why we can only be amused when we see the IFOAM data on world wide organic production where the pride of place is given to Australia which still claims that position because it has the largest area of grassland under organic production. Mind you, we are talking about grass for animals here and not food for human beings! However vital dairy meat, milk, hides or wool may be for human existence, it is nothing short of tragic that 21st century man is now giving the humble grass such a pedestal position. But that's what the IFOAM data does. Growing grass organically is part of growing food organically. Of course, the animals are fed antibiotics and pumped with chemicals, but the grass they eat is organic!

Even if organic grasslands were allowed for consideration, even on that score it would be difficult to displace a country like India since most of its meat products and a good proportion of its milk come from open foraging areas including forest and in most cases from agricultural residues like paddy and wheat straws and legumes. While paddy straw in green revolution areas would certainly be contaminated with pesticides, in most cases where paddy pr wheat is grown as a monsoon crop crop, this problem would not arise in any case.

Far more serious work needs to be done in this respect but what could confidently be stated right now is that the data generated by IFOAM is completely distorted and does not re-

P.V. Satheesh: Designed Organic

India's 'organic roduction' touched a figure of 14,000 tons in 2002. That is for a country that produces over 200 million tonnes of foodgrains! Of this, exports stood at a meagre 11,000 tonnes in 2002. This included seven broad categories like coffee, tea, spices, rice, wheat, pulses, oilseeds, fruits and vegetables, cashewnut, cotton and herbal extracts. The domestic sales were even bleaker. A miserable 1,000 tonnes. Barely 0.0006% of its total food consumption, for a country that consumes close to 150 million tonnes of foodgrains.

Is there some kind of optical illusion here? The way 'organic' is understood?

To begin with, let us look at the concept of organic farms itself. The data [from a MARG-ORG survey] says that India has about 5500 organic farms. What does this mean? Even if we assume that the entire wheat-rice production area in the country is under chemical agriculture, what happens to about 30 million hectares under the so-called coarse cereals? Even if 80% of them are considered as inorganic (a very unacceptable proposition), at least 20% have to be organic. In many parts of the Deccan plateau, the Himalayas and the adivasi areas across central India, farmers continue to farm without chemicals. This highly conservative estimate still indicates that about 7 million hectares are under organic cultivation. This, in turn would mean that about 3-4 million farms are under organic cultivation.

The moment we take this position, our place on the world organic map takes a quantum leap. With 7 million hectares under organic farming, we take the second position in the world, next only to Australia. The 6% of our farmland under organic production takes us to the eighth position from our current 75th position.

But will we take this stand? Would any of our policy makers, governmental institutions, agricultural scientists and accreditation agencies have the will and courage to argue this position of ours? On behalf of tens of millions of small and marginal farmers, adivasis who have been nurturing their land under organic practices for millenia? Decades before the term 'organic' became fashionable?

What remains crucial is the fact that the neo-organic people in this country, the business houses, farm scientists, accreditation agencies and government institutions do not once again shortchange small farmers, especially in the rainfed and hill regions of this country with a new money-driven organic system. A system which arrogates to itself the power to accredit an organic farm.

The certification system is central to world organic trade. Every farmer who wishes to sell her/his produce in the organic market must have the produce certified as organic by an approved accreditation agency. The certification was a cumbersome, time consuming process which subjected farmers to endless record keeping, filling in reams of forms and endless wait for the inspectors to visit their farms and issue certificates. All this at exorbitant fees.

On the other hand, millions of Indian small and marginal farmers who have been nourishing their lands organically for millennia need a different kind of support. Until now they were disparagingly called subsistence farmers who were organic by default, without realising that subsistence perspective is the best perspective for sustainable husbandry of natural resources and that these farmers were organic by design and not by default. They have established a deeper relationship with Mother Earth, a relationship which forbids them from poisoning their soils with chemicals. This spiritual vision of agriculture has been beyond the comprehension of agricultural scientists and economists for whom farms were for mining. That is why when a Bir Singh from Jhardar in Tehri Garhwal or Madho Gond from Chattisgarh or Anjamma from Medak in AP espouse a philosophy of organics no one listens to them. If the same philosophy appears in Orient Longman print from Masanabu Fukuoka, India farm scientists wow with wonder.

Apart from this familiar view of colonised minds, what indeed bothers one is the oppressive institutional policies that have constantly undermined the efforts of these farmers. For example, while perithroid poisoned grape gardening which is the biggest pollutor of prime soils and water attracts bank loans upto Rs 110,000 per acre, a millet farmer who constantly grows her soil cannot get a single rupee of crop loan. That too if s/he is a biodiverse farmer. All bank loans are for pure crop farmers, in other words, monoculturists. A floriculturist who pumps in tonnes of chemicals into the soil is a preferred farmer for state subsidies while a millet farmer who nourishes her/his soil with completely recycled organic wastes is not even eligible for insurance, let alone state subsidies. Such determined unlevelling of playing fields by the state institutions has constantly demoralised the organic family farmers all over the country. Add to this the middle class ignorance of the prime foodstuff. You have a picture of monumental national neglect of our traditional organic farmers.

What needs to be done is to support and show our gratefulness to the millions of women and men farmers across the Indian landscape with an unequivocal assertion that they are organic farmers. And to see that the small surpluses that they produce is recognised as premium food.

* * *

flect any of the realities of organic production worldwide. The data reflects the assumptions behind organic certification laid down for the European market. There is no justification in fact for relying on this data for organic production in India or China where reality indicates that organic production is still the bulk route for production of food in these nations.

At the moment, however, we can demand that the Government of India publicly acknowledge that India has not only the largest number of farmers who grow food organically, but the largest output of organically raised crops food in the entire world.

This is not only the largest but oldest organic farming nation in the world.

Hopefully with the Government of India now conceding that food can be raised organically without sacrificing production we may continue to maintain that eminent position for several decades into the future.

ASIA

BANGLADESH

Nayakrishi Andolan

5/3 Barabo Mahanpur, Ring Road, Shaymoli, Dhaka 1207,
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065, E-mail: ubinig@citechco.net

Nayakrishi Andolan is a community-based system of organic farming in Bangladesh. It started from the realisation of the harmful effects of so-called modern agriculture. Due to mounting debts many poor farmers were forced to sell land and other productive assets, and to shift to non-farming occupations. Amid such a background, some farmers gathered together to seek not just an alternative method of farming, but to make it community-based and organic in nature. They named it Nayakrishi Andolan.

The rationale for the name is to indicate that this method is not 'old' in a backward sense; it is a new method, which incorporates traditional knowledge and wisdom, and appropriate modern ideas and scientific innovation, provided they are suitable for the farmers as well as for the environment. Through a great deal of interaction and sharing among the farmers, both men and women, the Andolan has developed a philosophical base to productively relate with Nature and seek happiness in life. The farmers call it an Andolan – a movement – because they feel a change in the mindset of the people with regard to crop production and distribution is needed. The work must be done collectively, because that helps to strengthen the cause. Nayakrishi Andolan is therefore essentially a movement of the farmers to produce healthy food, a healthy environment and a happy life.

Nayakrishi Andolan is against environment destruction, the economic, social and political processes of dispossession, disempowerment, privatization and the consequent erosion of the common property, loss of seed and genetic resources, above all, the increasing perception of insecurity of food and productive resources.

Nayakrishi Andolan embodies the following principles:

1. No use of pesticides.
2. No use or gradual decrease in the application of chemical fertilisers.
3. Multicropping, inter-cropping, mixed cropping, agroforesty and other familiar methods are used to retain and enhance soil fertility.
4. Maintain and enhance biodiversity.
5. Local varieties of livestock and poultry are to be given priority in the farming household.
6. Seeds and genetic resources must be conserved at the household and community level.
7. Water resources must be conserved. Use of tube wells for irrigation is not necessary.

More than 25,000 farmers so far have been organised in the four districts of Tangail, Pabna, Cox's Bazar and Noakhali. Poor farmers, having land of less than one acre, constitute the majority (75%) of the Nayakrishi farmers. The activities of Nayakrishi Andolon are coordinated through centres run by UBINIG (an NGO) in all the project areas. In the centres, training programmes, workshops and meetings are organised where experienced Nayakrishi farmers train the new farmers. The farmers use the centres for mutual sharing of information. The backbone of the Nayakrishi farmer's network is the gram karmi or the extension workers. These are the marginal farmers, mostly women, who mobilise the farmers in their villages to work for Nayakrishi.

In order to disseminate this knowledge on a broader level, every year, a farmers and weavers fair is organised. Thousands of farmers participate in this fair. The conventional farmers also take part. It becomes an excellent event for debates, discussions and sharing of information between and among farmers of different areas. Cultural functions are an integral part of the fair and also Nayakrishi activities.

The main activities of Nayakrishi are conducted in the village on the farmers' own land. Farmers cultivate their land and share knowledge with their fellow members. They hold meetings and create an atmosphere for mutual friendship. They gradually declare a village as a Nayakrishi village, if pesticide use can be stopped totally. The use of deep tubewells is also stopped once the majority of the farmers in the village follow Nayakrishi farming practices.

(Source: Report)

SRI LANKA

Gami Seva Sevana Ltd

Office Junction, Galaha, Sri Lanka. Ph.: (O): 94 8 467201 /
94 71 724877 (R): 94 8 467562, Fax: 94 8 232343, Email :
Irsdes@eureka.tk.

Gami Seva Sevana (GSS) is an NGO founded in 1977 and registered as a company in 1981. It is situated in the Kandy country tea plantation area of Sri Lanka.

One of GSS's main activities is the promotion of organic agriculture. It runs a demonstration farm in a region where former intensive tea cultivation has left the soil degraded and eroded. Here it demonstrates various sustainable agriculture methods for soil conservation and multicropping. Animal husbandry and appropriate technologies are introduced to the people. Eight extension workers are involved in teaching, training and field work with farmers and other groups reaching more than 500 people in the vicinity of the centre regulary. GSS is in the process of forming an organic produce co-operative.

In the late 1980s, GSS initiated a net-work of 30 NGOs practising and promoting organic agriculture throughout the island. Representatives of this network meet six times a year.

Sri Lanka Nature Forum

Thilak Kariyawasam, Coordinator

(Thilak is also Secretary of the Lankan Organic Agriculture Movement.) The Sri Lanka Nature Forum is a network of environmental and developmental groups. It has 31 organisations promoting organic farming in Sri Lanka.

National Centre of Organic Farming in Sri Lanka

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Like Gami Seva Sevana and the SLNF, NCOF Sri Lanka organises regular training courses for farmers who are keen to convert from chemicals to organic. More information from their website.

THAILAND

The Thai Organic Trade Association (**TOTA**)

www.thaiorganictrade.com. Email: top@stc-group.com
C/o: 126/106 CM Tower, Krung Thonburi Rd., Banglampoo-Lang, Klong Sarn, Bangkok 10600, Thailand
Tel: 662-4394848 ext 2741 Fax: 662-8609020
Contact Person: Ms. Wannisa Pirunkunakorn

Founded in October 2005 with a common goal to enhance the organic movement in Thailand, in particular, understanding on organic products of Thai consumers and market expansion. The TOTA members consist of private companies involved with certified organic production and trade.

TOTA members' organic products are sold domestically and overseas. The range of products consists of organic vegetables, organic baby corns, organic Thai Jasmine Rice, organic honey, organic tapioca starch, organic sugar, organic coconut milk, etc.

PHILIPPINES

Go Organic! Philippines

Unit 304 Tempus Place I
Matalino St., Brgy. Central
Diliman, Quezon City, The Philippines.
www.goorganicphilippines.org/

A major group of NGOs, farmers organizations, local government units and sustainable agriculture advocates working together to promote organic farming as way of life to ensure better health, food security, balanced environment, and increased income for Filipino farmers.

The network strongly advocates for the urgent need to shift to organic farming systems to combat the rising prices of commodities and farm inputs, shortage in the supply of food and rapidly deteriorating environment.

MASIPAG

2611 Carbern Village,
Los Banos, Laguna.
Website: http://masipag.org/

A farmer-led network of people's organizations, non-government organizations and scientists working towards the sustainable use and management of biodiversity through farmers' control of genetic and biological resources, agricultural production and associated knowledge.

Over the last 17 years, MASIPAG has been at the forefront of development struggles in the Philippines pursuing, among other things, a holistic approach to development, community empowerment, and people's control over agricultural biodiversity as a contribution in the over-all effort of improving the quality of life of small farmers.

A year after that landmark gathering, a farmer-NGO-scientist partnership was formed and its first project was born primarily to break the control of local as well as multinational fertilizer and pesticide companies, multi-lateral rice research institutes and distribution cartels over the rice industry.

At present, MASIPAG has a total of 456 base POs, 42 NGOs, and 15 people in its pool of scientists who composed the General Assembly which serve as the highest policy and decision-making body of the network.

'Go Organic, Mindanao!'

Third World Network has worked closely with a local network of NGOs, church organizations and consumer groups in southern and central Mindanao in advocating for sustainable agriculture in the Philippines. The local partners are all involved in direct implementation of sustainable agriculture projects with communities in Mindanao. The network calls itself 'Go Organic, Mindanao' – the name that was coined by the organisers of a regional conference on sustainable agriculture that TWN initiated in December 2005.

TWN supported the group in analyzing the implications of Executive Order 481, which mandates relevant government agencies to support and institutionalise organic agriculture. Two members of 'Go Organic, Mindanao' represent Mindanao CSOs in the National Organic Agriculture Board (NOAB) and the National Technical Committee (NTC), which were formed under EO 481.

Through TWN support, 'Go Organic, Mindanao' organized a series of forums on Challenges and Opportunities to Organic Agriculture in Mindanao, as part of the celebration of World Food Day in October 2007. Regional forums were held in General Santos City, Davao City and Kidapawan City to raise public awareness on the opportunities and challenges to sustainable agriculture in Mindanao and to strengthen regional movements on organic agriculture. Each regional forum was attended by around 100 participants from local farmers' organizations, NGOs, church organizations, consumers' groups, local government units, the academe and private organic producers.

In 2008, 'Go Organic, Mindanao' was the local organizer, with the Philippines Bureau of Agriculture, Fisheries and Product Standards and the National Organic Agriculture Board, of the 5th National Organic Agriculture Conference and Trade Fair, which attracted more than 500 participants from around the country.

Malaysian farmers on a study tour of organic farms in Tamilnadu

MALAYSIA

Third World Network

131, Jalan Macalister, 10400, Penang, Malaysia. Ph.: 60-4-2266728/2266159 , Fax: 60-4-2264505, Email: twnet@po.jaring.my, Web: www.twnside.org.sg

Third World Network (TWN) is an independent non-profit international network of organisations and individuals involved in issues relating to development, Third World and North-South affairs.

TWN was formed in November 1984 in Penang, Malaysia at the concluding session of an International Conference on 'The Third World: Development or Crisis?' organised by the Consumers' Association of Penang and attended by over a hundred participants from 21 countries. At this conference, TWN was formed to coordinate and consolidate cooperation among development groups in the South.

Its mission is to bring about a greater articulation of the needs and rights of peoples in the Third World, a fair distribution of world resources, and forms of development which are ecologically sustainable and fulfill human needs.

Its main objectives are: to conduct research on economic, social and environmental issues pertaining to the South; to publish books and magazines; to organise and participate in meetings and seminars; and to provide a platform representing broadly Southern interests and perspectives at international fora such as the UN Conferences and processes.

Since its formation, TWN has been involved in research, media and publications activities, organised and participated in meetings, workshops and seminars on various international issues, including with UN agencies.

Its sustainable agriculture projects are located in Ethiopia, the Philippines and China (see under respective country sections).

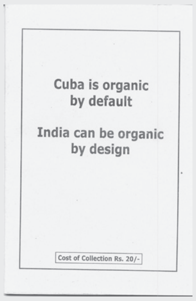
The Consumers' Association of Penang has been pushing organic farming within Malaysia now for more than five years. It sent more than 40 Chinese and Indian farmers to India to visit organic farms in south India. These farmers on their return became the nucleaus of a growing organic farming movement in Malaysia (where none existed before).

N. Gopalkrishnan visits Malaysia to advise organic farmers there who are doing thriving business in vermiculture.

The Cuban Organic Revolution

Cuba is organic by default;
India can be organic by design

By Manohar Parchure



Cuba is organic
by default

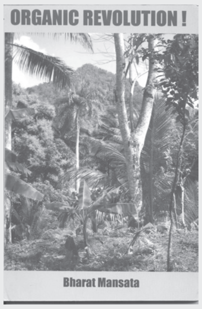
India can be organic
by design

Cost of Collection Rs. 20/-

Pp.52 Rs. 20
Available from OIB

Parchure describes how organic farming was thrust upon Cuba. Cut off from receiving supplies of chemical fertilisers, the Cubans decided instead to make do without them altogether. This proved to be a costly error indeed for American agribusiness. They are now permanently out of Cuban agriculture. Parchure argues India should go the same way.

Organic Revolution!



ORGANIC REVOLUTION !

Bharat Mansata

By Bharat Mansata

Pp.132 Rs. 150
Available from OIB

In his new book on the organic farming revolution in Cuba, Mansata provides a comprehensive view of how a country was at first forced to change over to organic farming and then discovered that it had made a sound decision in doing so.

Mansata's book tells you everything you need to know about the way organic farming grew in the country, eventually getting the Cuban Organic Farming Association the Right Livelihood Award. He also includes all the websites where one can get further information on the subject.

Today Cuba remains one of the few countries of the world with a double digit annual growth rate. Its people are the greatest gainers, especially in health. There has been a reported 45% decline in cardiovascular illnesses.

Cuban organic farm production effectively explodes the myth that agriculture cannot be done without chemicals and pesticides. The Cubans have learnt far better than all of us that nature's abilities to produce plants and food is undoubted. We have to only to see and to believe.

Worth reading, for those who wish India will follow Cuba and not the United States of America!

Ethiopia: The Tigray Project

A 10-year experiment in sustainable development and ecological land management in the Tigray region of Ethiopia has provided evidence that organic and sustainable agricultural practices have brought significant benefits to poor farmers and communities, particularly to women-headed families.

The Tigray region is highly degraded, contributing to low agricultural production, in turn threatening food security and exacerbating rural poverty. A farmer-led project, facilitated by the Institute for Sustainable Development (ISD) since 1996, began in four poor farming communities, in cooperation with the Ethiopian Bureau of Agriculture and Rural Development.

The main activities have been to implement organic and sustainable agricultural practices such as composting, water and soil conservation activities, and crop diversification. The project also supports poor women-headed families, provides skill training for unemployed girls, supplies seeds and seedlings for nurseries and farmers, facilitates experience sharing through exchange visits, and supports the use of simple and accessible technologies such as treadle pumps.

As a result, there have been significant benefits to poor farmers and communities, particularly to women-headed families. Among the benefits demonstrated are increased yields and productivity of crops, improved hydrology with raised water tables and permanent springs, improved soil fertility, less weeds, pests and diseases, rehabilitation of degraded lands and increased incomes. In particular, the farmers quickly saw the impact of compost on crop yields and the improved water regime of their fields. By 1998, data showed that using compost gave similar yield increases as chemical fertilisers. Data collected in 2002, 2003 and 2004 showed that on average, composted fields gave higher yields, sometimes double, than those treated with chemical fertilisers. New statistical analysis on the data confirms that over 7 years, for 4 out of 5 crops, compost results in higher yields than chemical fertilizers.

The farmers also found that the positive effects of compost can remain for up to four years. In contrast to chemical fertilisers, compost does not need to be applied every year. Compost also helps increase the moisture retention capacity of the soil. This is crucial in times of drought, which remains a problem in many parts of Ethiopia.

The impacts on farm incomes have been positive. The farmers are able to get out of debt from buying chemical fertilisers, and they are obtaining even higher yields, and thus economic returns, with using compost.

Local communities have been empowered, through the development of legally recognised bylaws to govern their land and other natural resource management activities. Local committees have been established to oversee the implementation of the project, and to make decisions for local management.

By 2005, the ISD and the Bureau of Agriculture and Rural Development were working together to implement the project in 42 communities. The Bureau was promoting the ‘sustainable agriculture package’ of compost-making, together with trench-bunding (to harvest soil and water) and planting multipurpose trees throughout the region.

The successes of the project have also led to its expansion to include many more communities in other parts of the country. The Ethiopian government has now adopted the approach used by the project as its main strategy for combating land degradation and poverty.

It is now recognised that there is a need to enhance the productivity of smallholder agriculture. As most poor farmers, particularly in marginal areas, are not able to afford external inputs, the principles and approach of the Ethiopian project, based on an organic production management system, have offered the farmers a real and affordable means to break out of poverty and obtain food security. This is one means by which progress towards eradicating hunger can be made.

Chinese innovations: Dream Farm 2

Third World Network is a partner of the Institute of Science in Society (ISIS), UK in implementing the ‘Dream Farm 2’ project, promoting integrated ecological agriculture that is ‘zero emission, zero waste.’

Dream Farm 2 maximises the use of renewable energies and turns ‘wastes’ into resources, thereby completely obviating the need for fossil fuels. It is also intended as a demonstration/education/research centre, information exchange, and incubator for new knowledge, technologies and designs in sustainable living.

In cooperation with ISIS, TWN entered into an arrangement with a veteran Chinese engineer from the Nanjing Institute of Geography and Limnology to fine-tune his improved design of a biogas digester that could be shared with TWN partners in other developing countries. Biogas digesters are very promising as a central technology for energy self-reliant farms and for contributing to zero emission of greenhouse gas. Potential sites for Dream Farm 2 have been identified in Java and Ethiopia among TWN’s associates.

TWN Publications on Sustainable Agriculture and Small Farms

THE TIGRAY EXPERIENCE: A Success Story in Sustainable Agriculture

By Hailu Araya & Sue Edwards

This paper documents the results of an experiment in sustainable development and ecological land management in the Tigray region of Ethiopia. The Tigray Project demonstrates that sustainable agricultural practices such as composting, harvesting of water and soil, and crop diversification, can bring benefits to poor farmers and communities, particularly to women-headed families. Among the benefits demonstrated are increased yields and productivity of crops, improved hydrology with raised water tables and permanent springs, improved soil fertility, rehabilitation of degraded lands and increased incomes. The successes of the project have led to its expansion to include many more communities in Tigray and in other parts of the country.

PUTTING FARMERS FIRST IN SUSTAINABLE AGRICULTURE PRACTICES

By Hira Jhamtani

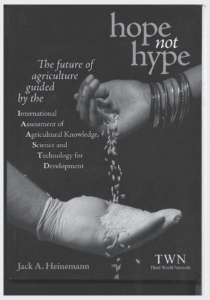
Given the environmental and health concerns attached to conventional agriculture and genetically modified crops, the need for an ecologically and economically sustainable form of farming is pressing. This paper examines the key principles of sustainable agriculture, which is defined as a holistic approach to food production and community welfare, as opposed to the narrow technological approach of conventional agriculture. It provides examples of successful adoption of sustainable agriculture practices in developing-country farming communities. The author also outlines the elements needed to effect a broad-based transition to sustainable agriculture systems which will yield economically productive, ecologically sound and socially just outcomes.

HOPE NOT HYPE

By Jack A. Heinemann

This most recent book to emerge from the TWN stable deals with a careful assessment of biotechnology, especially GMOs. Jack Heinemann is a professor of genetics and molecular biology at the School of Biological Sciences at the University of Canterbury and a senior adjunct professor of gene ecology at the Centre for Biosafety at Norway.

Hope not hype


hope not hype
The future of agriculture guided by the International Assessment of Agricultural Knowledge, Science and Technology for Development
Jack A. Heinemann
TWN Third World Network

By Jack A. Heinemann

(2009) pp. 160
Available from OIB

The assessment discusses biotechnology and genetic engineering. The author categorically states that GM crops are not designed to increase yield. He also answers questions like whether GM crops moreduce more revenue or reduce use of pesticides

ENDURING FARMS: CLIMATE CHANGE, SMALLHOLDERS AND TRADITIONAL FARMING COMMUNITIES

By Miguel A Altieri & Parviz Koohafkan

Most climate change models predict that this global phenomenon will have severe impacts on small farmers, particularly in developing countries. However, existing models at best provide a broad-brush approximation of expected effects on peasant farming systems and hide the enormous variability in internal adaptation strategies and the inherent resilience of such systems. Many rural and traditional farming communities seem to cope well with climatic extremes. In fact, many farmers adapt and even prepare for climate change, minimizing crop failure through increased use of drought-tolerant local varieties, water harvesting, extensive planting, mixed cropping, agroforestry, opportunistic weeding, wild plant gathering and a series of other traditional farming techniques. This booklet describes the impacts of climate change on smallholder/traditional family farming communities, and the agroecological features of indigenous agricultural systems which could serve as the foundation for the design of resilient agricultural systems and strategies for food security and poverty reduction in an era of climate change.

SMALL FARMS AS A PLANETARY ECOLOGICAL ASSET: Five Key Reasons Why We Should Support the Revitalisation of Small Farms in the Global South

by Miguel A Altieri

Humanity is quickly realising that the fossil fuel-based, capital-intensive, industrial-agricultural model is not working to meet global food demands. This book argues that small, biodiverse, agroecologically managed farms in the global South are the only viable form of agriculture that will feed the world under the new ecological and economic scenario. Five reasons are given for supporting the maintenance and revitalisation of small farms: Small farms are the key to the world's food security, are more productive and resource-conserving than large-scale monocultures, they represent models of sustainability and a sanctuary of GMO-free agrobiodiversity, and small farms cool the climate.

FOOD FUTURES NOW

*Organic *Sustainable *Fossil Fuel Free

By Mae-Wan Ho, Sam Burcher, Lim Li Ching & others

This book documents how organic agriculture and localised food (and energy) systems can potentially compensate for all greenhouse gas emissions due to human activities and free us from fossil fuels. It is a unique combination of the latest scientific analyses, case studies on farmer-led research, and especially farmers' own experiences and innovations that often confound academic scientists wedded to outmoded and obsolete theories. There is a welcome mix of practical know-how and new theoretical concepts to put things in the broadest perspective. Food Futures Now is a manual for social revolution to a post-fossil fuel economy that will restore the good life to all.

Books may be ordered online from www.twn.org.sg or send an E-mail, fax or air mail your orders for any of the publications to the following:

Postal Address: Third World Network, 131, Jalan Macalister, 10400 Penang, Malaysia. Fax: 604 2264 505, Email: twnet@po.jaring.my

EUROPE

IFOAM

Head Office, Charles-de-Gaulles-Strasse 5, Bonn, Germany 53113. Ph.: 49 228 926 50 10, Fax: 49 228 926 50 99, E-mail: HeadOffice@ifoam.org, Web: www.ifoam.org

IFOAM Liasion Office to the FAO, Email: c.grandi@ifoam.org

IFOAM represents the world wide organic agriculture movement. The federation's main function is to coordinate the international organic movement.

IFOAM is a democratic federation with all major decisions taken at its general assemblies, where its World Board is also elected. Members organize themselves according to geographic regions or sector interests. The federation's activities are also carried out in various committees, working groups and task forces.

Major aims and activities are:-

- To provide authorities information about organic agriculture, and to promote its worldwide applications.
- To exchange knowledge (e.g. via conferences, trade-fairs, and publications).
- To represent the organic movements at international policy making forums (IFOAM has consultative status with the UN and FAO.)
- To make an agreed international guarantee of organic quality a reality.
- To establish, maintain and regularly revise the international 'IFOAM Basic Standards' (translated so far into 20 languages) as well as the 'IFOAM Accreditation Criteria for Certifying Programmes.'
- To build a common agenda for all stakeholders in the organic sector, including producers, farm workers, consumers, the food industry, trade and society at large.

IFOAM offers many platforms for information exchange e.g. at the Organic World Congress and numerous other international, continental or regional IFOAM events. The magazine 'Ecology and Farming,' conference proceeding and other publications are also important information and networking tools.

IFOAM, as a federation of organic movements, offers affiliate status to associations, institution, traders, etc. that are active in the organic sector. Organisations, whose activities are predominately organic are granted voting rights. Others may join as associates while individuals are invited to join IFOAM as supporters.

Organic farmers in many countries have introduced certification in order to guarantee the quality of the product and of the production process according to organic standards. Government as well as the European Union have introduced regulations to control these guarantee systems. IFOAM is an umbrella organization that develops the 'standard of standards' and advocates for organic agriculture worldwide, whether certified or not.

IFOAM's international lobby activities give the organic movements a voice and influence. IFOAM's mission is leading, uniting and assisting the organic movement in its full diversity. IFOAM's goal is the worldwide adoption of ecologically, socially and economically sound systems that are based on the principles of organic agriculture.

(One can visit the following sites for detailed data on the emerging global trends in organic farming: www.organic-world.net, www.intracen.org/organics, www.fibl.org,www.ifoam.org.

The World of Organic Agriculture - Statistics and Emerging Trends 2009 FOAM FiBL Report, a bulky 304 page document edited by Helga Willer and Lukas Kilcher has just been released in Feb '09. (Source: Brochure)

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